Reference Manual

PlantPAx
Process Automation System

Rockwell Automation Library of Process Objects: PowerFlex 523/525 Variable Frequency Drives (P_PF52x)

Version 3.1

Allen-Bradley • Rockwell Software

Rockwell Automation

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of Rockwell Automation, Inc., is prohibited.

Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

	WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

	SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
	BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.
	ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

Allen-Bradley, Rockwell Software, Rockwell Automation, RSLogix, Logix5000, FactoryTalk, PlantPAx, PowerFlex, and ControlLogix are trademarks of Rockwell Automation, Inc.

Trademarks not belonging to Rockwell Automation are property of their respective companies.

Preface

Software Compatibility and Content Revision 5
Additional Resources 5

PowerFlex 523/525 Variable Frequency Drives (P_PF52x)

Guidelines 7
Functional Description 8
Required Drive Configuration 8
Required Files 9
Controller File 9
Visualization Files 9
Controller Code 11
PowerFlex 523/525 Variable Frequency Drives InOut Structure 11
PowerFlex 523/525 Variable Frequency Drives Input Structure 12
PowerFlex 523/525 Variable Frequency Drives Output Structure 18
PowerFlex 523/525 Variable Frequency Drives Local Configuration Tags 23
Operations 24
Modes 24
Alarms 25
Simulation 25
Execution 26
Programming Example 27
Display Elements 28
State Indicators 31
Status/Quality Indicators 31
Maintenance Bypass Indicator 33
Mode Indicators 34
Alarm Indicators 35
Using Display Elements 36
Quick Display 38
Faceplate 38
Operator Tab 39
Maintenance Tab 44
Engineering Tab 48
Diagnostics Tab 57
Trends Tab 58
Alarms Tab 59
PowerFlex 523/525 Variable Frequency Drives Faceplate Help 61

Notes:

This manual contains new and updated information. Changes throughout this revision are marked by change bars, as shown to the right of this paragraph.

Software Compatibility and Content Revision

Table 1 - Summary of Changes

Topic	Page
Using Display Elements, Changed parameter #102 in the Global Object Parameter Values dialog box to read 'SC105'	37

For the latest compatible software information and to download the Rockwell Automation® Library of Process Objects, see the Product Compatibility and Download Center at http://www.rockwellautomation.com/rockwellautomation/support/pcdc.page.

For general library considerations, see Rockwell Automation Library of Process Objects, publication PROCES-RM002.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Table 2 - Additional Resources

Resource	Description
PlantPAx® Process Automation System Selection Guide, publication PROCES-SG001	Provides information to assist with equipment procurement for your PlantPAx system.
PlantPAx Process Automation System Reference Manual, publication PROCES-RM001	Provides characterized recommendations for implementing your PlantPAx system.
Rockwell Automation Library of Process Objects, publication PROCES-RM002	Provides general considerations for the PlantPAx system library of process objects.
FactoryTalk® View Machine Edition User Manual, publication VIEWME-UM004	Provides details on how to use this software package for creating an automation application.
FactoryTalk View Site Edition User Manual, publication VIEWSE-UM006	Provides details on how to use this software package for developing and running human machine interface (HMI) applications that can involve multiple users and servers, distributed over a network.
PowerFlex® 520-series AC Drives Specification, publication 520-TD001	Shows the specifications and certifications for the PowerFlex 520-series AC drives.
PowerFlex 520-Series Adjustable Frequency AC Drive User Manual, publication 520-UM001	Provides information on using the PowerFlex 520-Series Adjustable Frequency AC Drives.
Logix5000™ Controllers Add-On Instructions Programming Manual, publication 1756-PM010	Provides information for designing, configuring, and programming Add-On Instructions.
Rockwell Automation Library of Process Objects: Common Alarm Block (P_Alarm) Reference Manual, publication SYSLIB-RM002	Details how to monitor an input condition to raise an alarm. Information includes acknowledging, resetting, inhibiting, and disabling an alarm. Generally the P_Alarm faceplate is accessible from the Alarms tab.
Rockwell Automation Library of Process Objects: Interlocks with First Out and Bypass (P_Intlk) Reference Manual, publication SYSLIB-RM004	Explains how to collect (sum up) the interlock conditions that stop or de-energize a running or energized piece of equipment or prevent it from starting or being energized.

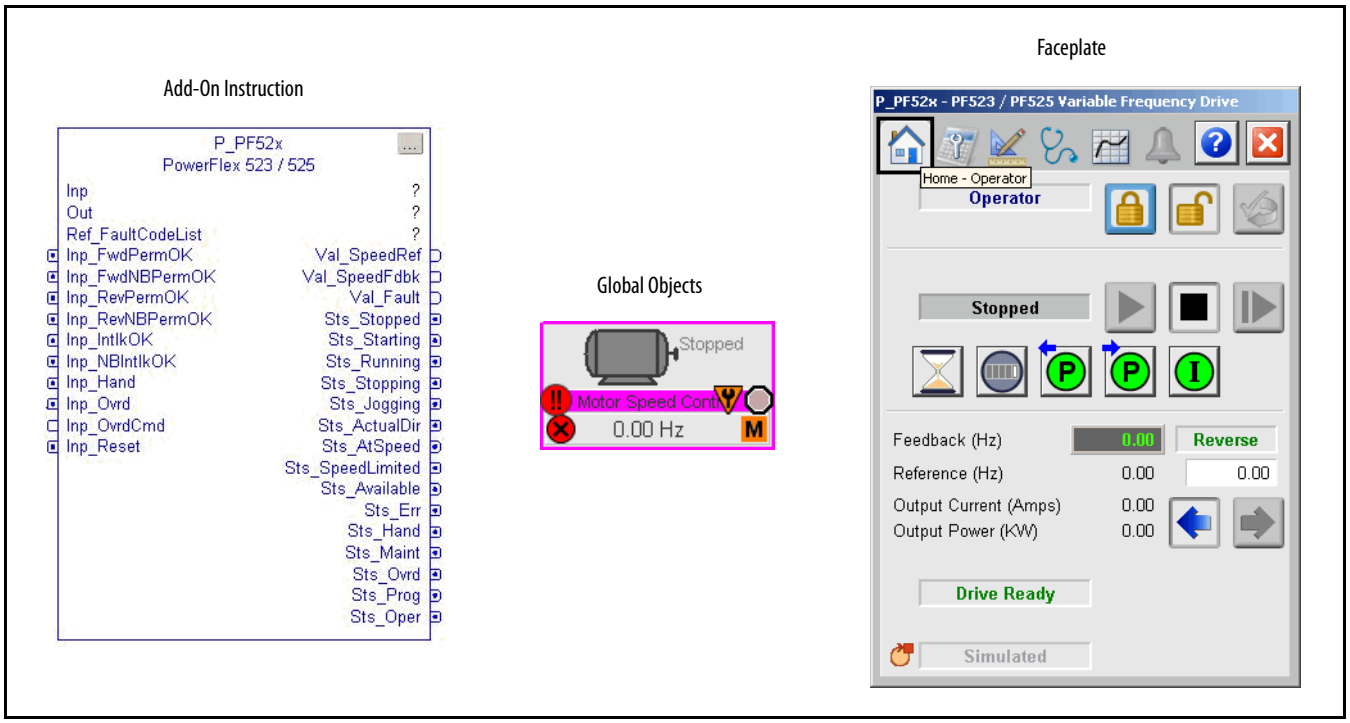
Table 2 - Additional Resources

Resource	Description
Rockwell Automation Library of Process Objects: Common Mode Block (P_Mode) Reference Manual, publication SYSLIB-RM005	Explains how to select the Mode (owner) of an instruction or control strategy. The Mode instruction is usually embedded within other instructions to extend their functionality. It is possible to use a standalone Mode instruction to enhance a program where modes are wanted.
Rockwell Automation Library of Process Objects: Permissives with Bypass (P_Perm) Reference Manual, publication SYSLIB-RM007	Details how to collect permissive conditions to start a piece of equipment.
Rockwell Automation Library of Process Objects: Restart Inhibit for Large Motor (P_ResInh) Reference Manual, publication SYSLIB-RM009	Explains how to protect a large motor from damage caused by repeated starts.
Rockwell Automation Library of Process Objects: Run Time and Starts (P_RunTime) Reference Manual, publication SYSLIB-RM010	Explains how to accumulate the total run time and count of starts for a motor or other equipment.

You can view or download publications at http://www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

PowerFlex 523/525 Variable Frequency Drives (P_PF52x)

The P_PF52x (PowerFlex 523/525 Variable Frequency Drives) object is used to control and monitor a PowerFlex 523 Variable-Frequency Drive with optional EtherNet/IP Interface. The P_PF52x can also control and monitor a PowerFlex 525 Variable-Frequency Drive with embedded or optional add-on EtherNet/IP Interface.



Guidelines

Use this instruction to monitor and control a motor that uses an Allen-Bradley PowerFlex 523 or PowerFlex 525 variable frequency drive interfaced via EtherNet/IP. This instruction provides for collecting and displaying diagnostic information from the drive by using configured datalinks on the EtherNet/IP interface.

Do not use this instruction with other Allen-Bradley drive families. There are dedicated Add-On Instructions for the PowerFlex 753 variable frequency drive that use the 20-COMM-E EtherNet/IP interface (P_PF753), and for the PowerFlex 753 or 755 variable frequency drive that use the built-in or add-on 20-750-series EtherNet/IP interfaces (P_PF755). Other Allen-Bradley (or non-Allen-Bradley) drive families should use the P_VSD generic Variable Speed Drive Add-On Instruction.

Functional Description

The P_PF52x instruction provides the following capabilities:

- Starting, stopping, jogging of the drive, and setting speed reference and direction
- Monitoring of run feedback, display of actual drive status, including acceleration, deceleration, direction, and speed
- Detection of Failure to Start, Failure to Stop, and Drive Fault
- Monitoring of Permissive conditions to allow starting
- Monitoring of Interlock conditions to stop/prevent starting
- Simulation, providing feedback of a working drive while the outputs are disabled
- Monitoring I/O communication faults
- Alarms for Fail to Start, Fail to Stop, Interlock Trip, Drive Fault, and I/O Fault
- Option to automatically reset faults and alarms when an operator commands the motor to start or stop
- Supports HMI 'breadcrumbs' for Alarm Inhibited, Bad Configuration, Not Ready, and Maintenance Bypass Active
- 'Available' status for use by automation logic to know whether a motor can be controlled by other objects

Required Drive Configuration

IMPORTANT 'User Choice' Datalinks are not used by this Add-On Instruction and can be left unused or set up for your application.

Be certain to set up the drive Datalinks as follows:

- Input Assembly
  - Drive Status (standard)
  - Output Frequency (standard)
  - Datalinks:
    1. Fault 1 Code (Par 007)
    2. Output Current (Par 003)
    3. Output Power (Par 017)
    4. User choice
- Output Assembly
  - Drive Logic Command (standard)
  - Frequency Command (Speed Reference) (standard)
  - Datalinks:

    All four output datalinks are user choice

Required Files

Add-On Instructions are reusable code objects that contain encapsulated logic that can streamline implementing your system. This code lets you create your own instruction set for programming logic as a supplement to the instruction set provided natively in the ControlLogix® firmware. An Add-On Instruction is defined once in each controller project, and can be instantiated multiple times in your application code as needed.

Controller File

The P_PF52x_3_1-**00**_RUNG.L5X rung import must be imported into the controller project to be used in the controller configuration. The service release number (boldfaced) can change as service revisions are created.

Visualization Files

The following files for this Add-On Instruction can be downloaded from the Product Compatibility and Download Center at http://www.rockwellautomation.com/rockwellautomation/support/pcdc.page.

IMPORTANT Files must be imported in the following order: image files, then global object files, and then graphic files. This order is required to configure the visualization files properly.

Table 3 - P_PF52x Visualization File Types

Application Type	File Type	FactoryTalk View SE Software	FactoryTalk View ME Software	Description
Graphics - Displays	GFX	(RA-BAS) P_PF52x-Faceplate	(RA-BAS-ME) P_PF52x-Faceplate	The faceplate display that is used for the object.
		(RA-BAS) P_PF52x-Quick	(RA-BAS-ME) P_PF52x-Quick	The Quick display that is used for the object.
		(RA-BAS) Common-AnalogEdit	N/A	Faceplate that is used for analog input data entry. The FactoryTalk View ME faceplates use the native analog input data entry so no file is required.
		(RA-BAS) P_Alarm-Faceplate	(RA-BAS-ME) P_Alarm-Faceplate	The alarm faceplate display that is used for the object.
		(RA-BAS) P_Alarm-Help	(RA-BAS-ME) P_Alarm-Help	P_Alarm Help information that is accessed from the P_VSD Help faceplate.
		(RA-BAS) P_Mode-Config	(RA-BAS-ME) P_Mode-Config	Display used to set Default mode.
		(RA-BAS) P_Mode-Help	(RA-BAS-ME) P_Mode-Help	Mode information that is accessed from the P_VSD Help faceplate.
		(RA-BAS) P_VSD-Help	(RA-BAS-ME) P_VSD-Help	The P_VSD Help faceplate. **TIP:** The PowerFlex 52x and PowerFlex 755 drives use the VSD Help faceplates.

Table 3 - P_PF52x Visualization File Types

Application Type	File Type	FactoryTalk View SE Software	FactoryTalk View ME Software	Description
Optional Graphic Displays	GFX	(RA-BAS) P_Intlk-Faceplate	(RA-BAS-ME) P_Intlk-Faceplate	The interlock faceplate that is used for the object. Use this file if your PowerFlex 523/525 Variable Frequency Drives has an associated P_Intlk object and you enable navigation to its faceplate from the PowerFlex 523/525 Variable Frequency Drives faceplate.
		(RA-BAS) P_IntlkPerm-Help	(RA-BAS-ME) P_IntlkPerm-Help	Interlock/Permissives Help information that is accessed from the P_Intlk or P_Perm Help faceplate. Use this file if you use the PowerFlex 523/525 Variable Frequency Drives Interlock or Permissives faceplate.
		(RA-BAS) P_Perm-Faceplate	(RA-BAS-ME) P_Perm-Faceplate	The Permissives faceplate that is used for the object. Use this file if your PowerFlex 523/525 Variable Frequency Drives has an associated P_Perm object and you enable navigation to its faceplate from the PowerFlex 523/525 Variable Frequency Drives faceplate.
		(RA-BAS) P_ResInh-Faceplate	(RA-BAS-ME) P_ResInh-Faceplate	The Restart Inhibit faceplate display that is used for the object. Use this file if your PowerFlex 523/525 Variable Frequency Drives has an associated P_ResInh object and you enable navigation to its faceplate from the PowerFlex 523/525 Variable Frequency Drives faceplate.
		(RA-BAS) P_RunTime-Faceplate	(RA-BAS-ME) P_RunTime-Faceplate	The RunTime faceplate that is used for the object. Use this file if your PowerFlex 523/525 Variable Frequency Drives has an associated P_RunTime object and you enable navigation to its faceplate from the PowerFlex 523/525 Variable Frequency Drives faceplate.
Graphics - Global Objects	GGFX	(RA-BAS) Common Faceplate Objects	(RA-BAS-ME) Common Faceplate Objects	Common global objects used on all Process Object faceplates.
		(RA-BAS) Process Alarm Objects	(RA-BAS-ME) Process Alarm Objects	Global objects that are used that are for alarming on Process Library faceplates.
		(RA-BAS) Process Faceplate Motor Objects	(RA-BAS-ME) Process Faceplate Motor Objects	Motor objects on Process Library Motor faceplates.
		(RA-BAS) Process Help Objects	(RA-BAS-ME) Process Help Objects	Common global objects that are used for all Process Objects help displays.
		(RA-BAS) Process Interlock Objects	(RA-BAS-ME) Process Interlock Objects	Global objects that are used for managing interlocks and permissives on Process Object faceplates.
		(RA-BAS) Process Mode Objects	(RA-BAS-ME) Process Mode Objects	Common global objects that are used for managing modes on Process Object faceplates.
		(RA-BAS) P_VSD Graphics Library	(RA-BAS-ME) P_VSD Graphics Library	Graphic objects that are used to build process displays.
Graphics - Images	PNG	All .png files in the images folder	All .png files in the images folder	The common icons that are used in the global objects and faceplates for all Process Objects. When PNG graphic formats are imported, they are renamed like a BMP file but retain a PNG format.

Table 3 - P_PF52x Visualization File Types

Application Type	File Type	FactoryTalk View SE Software	FactoryTalk View ME Software	Description
HMI Tags	CSV	N/A	FTVME_PlantPAxLib_Tags_3_1_**00**.csv (1)	These tags must be imported into the FactoryTalk View ME project to support switching tabs on any Process Object faceplate.

(1) The service release number (boldfaced) can change as service revisions are created.

Controller Code

This section describes the parameter references for this Add-On Instruction.

PowerFlex 523/525 Variable Frequency Drives InOut Structure

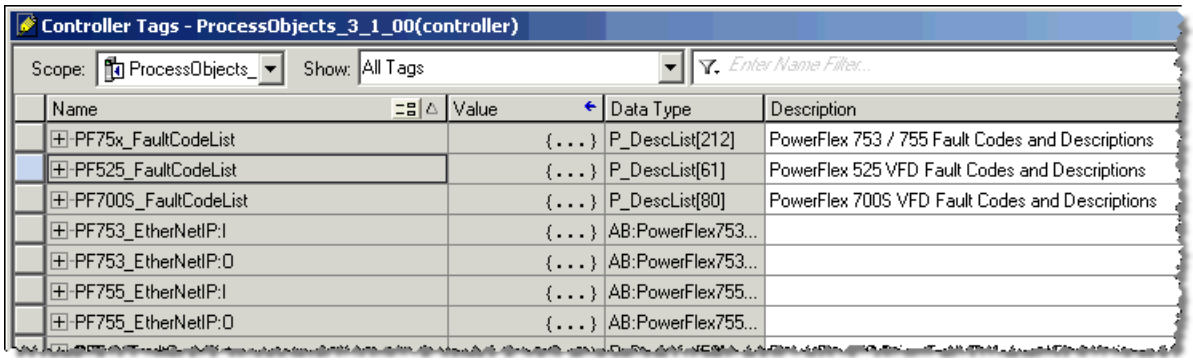
InOut parameters are used to link the Add-On Instruction to external tags that contain necessary data for the instruction to operate. These external tags must be of the data type shown.

Table 4 - P_PF52x Drive InOut Parameters

Tag Name	Data Type	Description
Inp	P_PF52x_Inp	Common part of PowerFlex 52x input assembly.
Out	P_PF52x_Out	Common part of PowerFlex 52x output assembly.
Ref_FaultCodeList	P_DescList[1]	Array tag that contains a list of fault codes (DINT) and their descriptions (STRING).

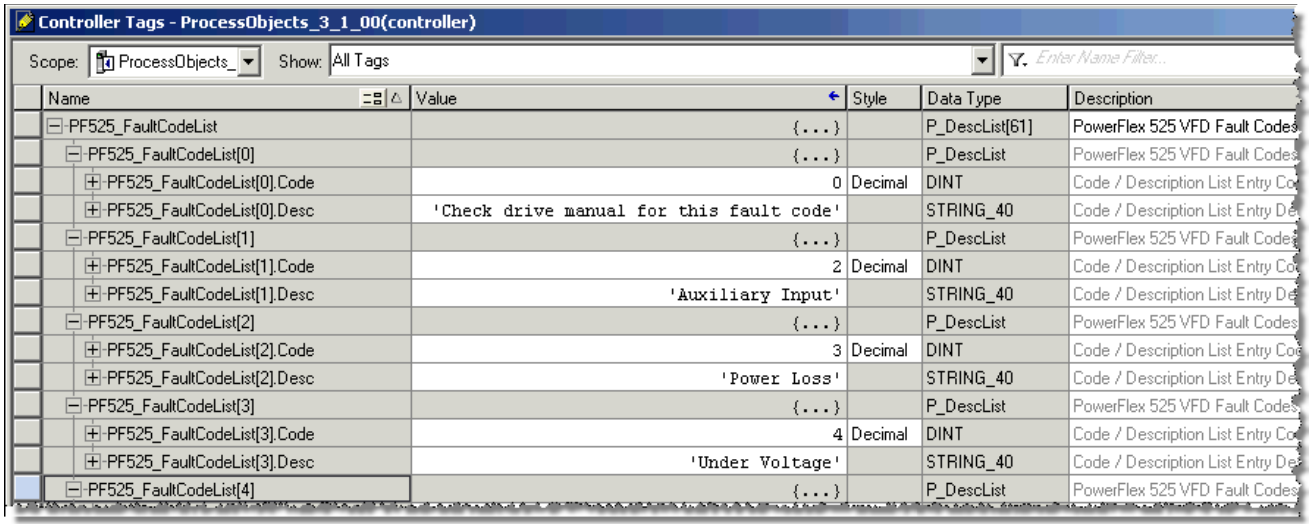
TIP The User-defined Types (UDTs), the I/O assembly tags, and the Array tag that contain the list of PowerFlex 52x fault codes and descriptions are included in the Rung import that brings in the P_PF52x Add-On Instruction. See the programming example on page 27 for details.

The following figure shows the drive fault table tags that are in each library application template.


Controller Tags - ProcessObjects_3_1_00(controller)
Scope: ProcessObjects_
Show: All Tags
Enter Name Filter...
Name
Value
Data Type
Description
PF75x_FaultCodeList { . . . } P_DescList[212] PowerFlex 753 / 755 Fault Codes and Descriptions
PF525_FaultCodeList { . . . } P_DescList[61] PowerFlex 525 VFD Fault Codes and Descriptions
PF700S_FaultCodeList { . . . } P_DescList[80] PowerFlex 700S VFD Fault Codes and Descriptions
PF753_EtherNetIP:I { . . . } AB:PowerFlex753...
PF753_EtherNetIP:O { . . . } AB:PowerFlex753...
PF755_EtherNetIP:I { . . . } AB:PowerFlex755...
PF755_EtherNetIP:O { . . . } AB:PowerFlex755...

To display fault code messages in P_PF52x, enter the name of the Fault Code List tag (first column) in the P_PF52x Ref_FaultCodeList parameter.

Each fault code list has preset codes and descriptions for translating fault code numbers that are received from the drive to human-readable drive fault descriptions.


Controller Tags - ProcessObjects_3_1_00(controller)
Scope: ProcessObjects_
Show: All Tags
Enter Name Filter...
Name
Value
Style
Data Type
Description
PF525_FaultCodeList {...} P_DescList[61] PowerFlex 525 VFD Fault Codes
PF525_FaultCodeList[0] {...} P_DescList PowerFlex 525 VFD Fault Codes
PF525_FaultCodeList[0].Code 0 Decimal DINT Code / Description List Entry Co
PF525_FaultCodeList[0].Desc 'Check drive manual for this fault code' STRING_40 Code / Description List Entry De
PF525_FaultCodeList[1] {...} P_DescList PowerFlex 525 VFD Fault Codes
PF525_FaultCodeList[1].Code 2 Decimal DINT Code / Description List Entry Co
PF525_FaultCodeList[1].Desc 'Auxiliary Input' STRING_40 Code / Description List Entry De
PF525_FaultCodeList[2] {...} P_DescList PowerFlex 525 VFD Fault Codes
PF525_FaultCodeList[2].Code 3 Decimal DINT Code / Description List Entry Co
PF525_FaultCodeList[2].Desc 'Power Loss' STRING_40 Code / Description List Entry De
PF525_FaultCodeList[3] {...} P_DescList PowerFlex 525 VFD Fault Codes
PF525_FaultCodeList[3].Code 4 Decimal DINT Code / Description List Entry Co
PF525_FaultCodeList[3].Desc 'Under Voltage' STRING_40 Code / Description List Entry De
PF525_FaultCodeList[4] {...} P_DescList PowerFlex 525 VFD Fault Codes

For a complete list of Fault Codes for the PowerFlex 523/525 Variable Frequency Drives, refer to the PowerFlex 520-series Adjustable Frequency AC Drives User Manual, publication 520-UM001.

PowerFlex 523/525 Variable Frequency Drives Input Structure

Input parameters include the following:

- Input data elements (Inp_) are typically used to connect field inputs from I/O modules or signals from other objects.
- Configuration data elements (Cfg_) are used to set configurable capabilities and features of the instruction.
- Command data elements (PCmd_, OCmd_, MCmd_) are used by program logic, operators, and maintenance personnel to request instruction actions.
- Setting data elements (PSet_, OSet_, MSet_) are used by program logic, operators, and maintenance personnel to establish runtime setpoints, thresholds, and so forth. Set_ data elements (without a leading P, O, or M) establish runtime settings regardless of role or mode.

Table 5 - P_PF52x Drive Input Parameters

Input Parameter	Data Type	Alias For	Default	Description
EnableIn	BOOL		1	**Ladder Diagram:** If the rung-in condition is true, the instruction's Logic routine executes. If the rung-in condition is false, the instruction's EnableInFalse routine executes. **Function Block Diagram:** If true, or not connected, the instruction's Logic routine executes. If the parameter is exposed as a pin and wired, and the pin is false, the instruction's EnableInFalse routine executes. **Structured Text:** No effect. The instruction's Logic routine executes.
Inp_FwdPermOK	BOOL		1	1 = Permissives OK, drive can start Forward.
Inp_FwdNBPermOK	BOOL		1	1 = Permissives (those that cannot be bypassed) OK, drive can start Forward.

Table 5 - P_PF52x Drive Input Parameters

Input Parameter	Data Type	Alias For	Default	Description
Inp_RevPermOK	BOOL		1	1 = Permissives OK, drive can start Reverse.
Inp_RevNBPermOK	BOOL		1	1 = Non-bypassable Permissives OK, motor can start Reverse.
Inp_IntlkOK	BOOL		1	1 = Interlocks OK, drive can start/run.
Inp_NBIntlkOK	BOOL		1	1 = Non-bypassable Interlocks OK, drive can start/run.
Inp_IOFault	BOOL		0	Input communication status: 0 = OK, 1 = fail
Inp_Sim	BOOL		0	Simulation input. When set to 1, the instruction keeps outputs de-energized (zero) and simulates a working drive. When set to 0, the instruction operates the drive normally.
Inp_Hand	BOOL		0	1 = Request to acquire Hand mode 0 = Release Hand mode
Inp_Ovrd	BOOL	Mode.Inp_Ovrd	0	1 = Request to Acquire Override mode 0 = Release Override mode
Inp_OvrdCmd	SINT		0	Override mode command: 0 = None 1 = Stop 2 = Start Fwd 3 = Start Rev
Inp_OvrdSpeed	REAL		0.0	Value to set Speed Reference in Override mode (SpeedRef engineering units).
Inp_Reset	BOOL		0	1 = Reset drive fault conditions and latched Alarms.
Cfg_HasReverse	BOOL		0	1 = Drive can be run reverse. 0 = Forward only.
Cfg_HasJog	BOOL		0	1 = Drive Jog Command enabled/visible. 0 = Drive Jog Command not allowed.
Cfg_AllowLocal	BOOL		0	1 = Allow Local Start/Stop without alarm. 0 = Start/Stop from HMI/program only.
Cfg_HasFwdPermObj	BOOL		0	1 = Tells HMI a forward permissive object (for example, P_Perm) is used for Inp_FwdPermOK and navigation to the permissive object's faceplate is enabled. **IMPORTANT:** The name of the Forward Permissive object in the controller must be this object's name with the suffix '_FwdPerm'. For example, if your P_PF52x object has the name 'PF52x123', then its Forward Permissive object must be named 'PF52x123_FwdPerm'.
Cfg_HasRevPermObj	BOOL		0	1 = Tells HMI a reverse permissive object (for example, P_Perm) is used for Inp_RevPermOK and navigation to the permissive object's faceplate is enabled. **IMPORTANT:** The name of the Reverse Permissive object in the controller must be this object's name with the suffix '_RevPerm'. For example, if your P_PF52x object has the name 'PF52x123', then its Reverse Permissive object must be named 'PF52x123_RevPerm'.
Cfg_HasIntlkObj	BOOL		0	1 = Tells HMI an interlock object (for example, P_Intlk) is used for Inp_IntlkOK and navigation to the interlock object's faceplate is enabled. **IMPORTANT:** The name of the Interlock object in the controller must be this object's name with the suffix '_Intlk'. For example, if your P_PF52x object has the name 'PF52x123', then its Interlock object must be named 'PF52x123_Intlk'.
Cfg_HasResInhObj	BOOL		0	1 = Tells HMI a restart inhibit object (for example, P_ResInh) is connected and navigation to the restart inhibit object's faceplate is enabled. **IMPORTANT:** The name of the Restart Inhibit object in the controller must be this object's name with the suffix '_ResInh'. For example, if your P_PF52x object has the name 'PF52x123', then its Restart Inhibit object must be named 'PF52x123_ResInh'.

Table 5 - P_PF52x Drive Input Parameters

Input Parameter	Data Type	Alias For	Default	Description
Cfg_HasRunTimeObj	BOOL		0	1 = Tells HMI a runtime object (for example, P_RunTime) is connected and navigation to the runtime object's faceplate is enabled. **IMPORTANT:** The name of the runtime object in the controller must be this object's name with the suffix '_RunTime'. For example, if your P_PF52x object has the name 'PF52x123', then its runtime object must be named 'PF52x123_RunTime'.
Cfg_SetTrack	BOOL		1	This parameter is used to set up bumpless behavior of setting parameters when switching modes. When this parameter is 1: • In Program mode the operator settings track the program settings. • In Operator mode the program settings track the operator settings. • The simulation inputs match the output values (transitions are bumpless). When this parameter is 0, the operator settings and program settings are not modified by this instruction. In this case, when the mode is changed, the effective value of the setting can change depending on the program-set and operator-set values.
Cfg_SetTrackOvrdHand	BOOL		0	1 = Program/Operator settings track Override/Hand mode settings.
Cfg_PCmdClear	BOOL	Mode.Cfg_PCmdClear	1	When this parameter is 1, program commands are cleared once they are acted upon. When set to 0, program commands remain set until cleared by the application program logic. **IMPORTANT:** Clearing this parameter online can cause unintended program command execution.
Cfg_ProgDefault	BOOL	Mode.Cfg_ProgDefault	0	This parameter defines the default mode. When this parameter is 1, the mode defaults to Program if no mode is being requested. When this parameter is 0, the mode defaults to Operator if no mode is being requested. **IMPORTANT:** Changing this parameter online can cause unintended mode changes.
Cfg_OperStopPrio	BOOL		0	1 = OCmd_Stop has priority, accepted any time. If OCmd_Stop stops the drive in a mode other than Maintenance or Operator, a reset is required to start. 0 = OCmd_Stop only in Operator or Maintenance mode.
Cfg_OCmdResets	BOOL		0	1 = New Operator drive command resets fault. 0 = Reset required to clear fault.
Cfg_OvrdPermIntlk	BOOL		0	1 = Override ignores Bypassable Permissive/ Interlock. 0 = Always use Permissive/ Interlock.
Cfg_ShedOnFailToStart	BOOL		1	1 = Stop motor and alarm on Fail to Start. 0 = Alarm only on Fail to Start. **IMPORTANT:** If a condition is configured to shed the device to the Stopped state on a fault, a reset is required to clear the shed fault. The drive can now be commanded to a state other than Stopped.
Cfg_ShedOnIOFault	BOOL		1	1 = Stop motor and alarm on I/O Fault. 0 = Alarm only on I/O Fault. **IMPORTANT:** If a condition is configured to shed the device to the Stopped state on a fault, a reset is required to clear the shed fault. The drive can now be commanded to a state other than Stopped.
Cfg_SimScaleEU	BOOL		0	If Cfg_SimScaleEU = 1, in simulation, scale Speed Ref engineering units to Speed feedback engineering units. If Cfg_SimScaleRaw = 1, in simulation, scale Speed Ref engineering units to raw, then raw to Speed feedback engineering units. If both of these parameters are zero, the simulated speed reference is ramped to the simulated speed feedback without scaling.
Cfg_SimScaleRaw				

Table 5 - P_PF52x Drive Input Parameters

Input Parameter	Data Type	Alias For	Default	Description
Cfg_HasFailToStartAlm	BOOL	FailToStart.Cfg_Exists	0	These parameters determine whether the corresponding alarm exists and is checked or if the alarm does not exist and is not used. When these parameters are 1, the corresponding alarm exists.
Cfg_HasFailToStopAlm		FailToStop.Cfg_Exists		
Cfg_HasIntlkTripAlm		IntlkTrip.Cfg_Exists		
Cfg_HasDriveFaultAlm		DriveFault.Cfg_Exists		
Cfg_HasIOFaultAlm		IOFault.Cfg_Exists		
Cfg_FailToStartResetReqd	BOOL	FailToStart.Cfg_ResetReqd	0	These parameters determine whether a reset is required to clear the alarm status. When these parameters are 1, the alarm is latched ON when the alarm occurs. After the alarm condition returns to normal, a reset is required to clear the alarm status. For example, OCmd_Reset, Inp_Reset, or Drivefault.OCmd_Reset are required to clear Alm_DriveFault alarm after the alarm is set and the value returns to normal. When these parameters are 0, no reset is required and the alarm status is cleared when the alarm condition returns to normal. **IMPORTANT:** If the reset clears the alarm, it also acknowledges the alarm.
Cfg_FailToStopResetReqd		FailToStop.Cfg_ResetReqd		
Cfg_IntlkTripResetReqd		IntlkTrip.Cfg_ResetReqd		
Cfg_DriveFaultResetReqd		DriveFault.Cfg_ResetReqd		
Cfg_IOFaultResetReqd		IOFault.Cfg_ResetReqd		
Cfg_FailToStartAckReqd	BOOL	FailToStart.Cfg_AckReqd	1	These parameters determine whether an acknowledgement is required for an alarm. When these parameters are 1, the acknowledge (ack) bit is cleared when the alarm occurs. An acknowledge command (for example, PCmd_FailAck or Fail.OCmd_Ack) is required to acknowledge the alarm. When set to 0, the Acknowledge bit is set when an alarm occurs indicating an acknowledged alarm and no acknowledge command is required.
Cfg_FailToStopAckReqd		FailToStop.Cfg_AckReqd		
Cfg_IntlkTripAckReqd		IntlkTrip.Cfg_AckReqd		
Cfg_DriveFaultAckReqd		DriveFault.Cfg_AckReqd		
Cfg_IOFaultAckReqd		IOFault.Cfg_AckReqd		
Cfg_FailToStartSeverity	INT	FailToStart.Cfg_Severity	1000	These parameters determine the severity of each alarm. The severity drives the color and symbol that are used to indicate alarm status on the faceplate and global object. The following are valid values: 1…250 = Low 251…500 = Medium 501…750 = High 751…1000 = Urgent **IMPORTANT:** For FactoryTalk View software version 7.0, these severity parameters drive the indication only on the global object and faceplate.The Alarms and Events definition of severity drives the color and symbol that is used on the alarm banner and alarm summary. The definition also drives the value returned by FactoryTalk Alarms and Events display commands.
Cfg_FailToStopSeverity		FailToStop.Cfg_Severity		
Cfg_IntlkTripSeverity		IntlkTrip.Cfg_Severity	250	
Cfg_DriveFaultSeverity		DriveFault.Cfg_Severity	1000	
Cfg_IOFaultSeverity		IOFault.Cfg_Severity		
Cfg_MinSpdRef	REAL		0.0	Minimum Speed Reference in engineering units (for limiting).
Cfg_MaxSpdRef	REAL		60.0	Maximum Speed Reference in engineering units (for limiting).
Cfg_SpeedRefRawMin	DINT		0	Speed Reference Minimum in Drive (raw) Units (for scaling).
Cfg_SpeedRefRawMax	DINT		6000	Speed Reference Maximum in Drive (raw) Units (for scaling).
Cfg_SpeedRefEUMin	REAL		0.0	Speed Reference Minimum in Engineering Units (for scaling).
Cfg_SpeedRefEUMax	REAL		60.0	Speed Reference Maximum in Engineering Units (for scaling).
Cfg_SpeedFdbkRawMin	DINT		0	Speed Feedback Minimum in Drive (raw) Units (for scaling).
Cfg_SpeedFdbkRawMax	DINT		6000	Speed Feedback Maximum in Drive (raw) Units (for scaling).
Cfg_SpeedFdbkEUMin	REAL		0.0	Speed Feedback Minimum in Engineering Units (for scaling).
Cfg_SpeedFdbkEUMax	REAL		60.0	Speed Feedback Maximum in Engineering Units (for scaling).
Cfg_SimRampT	DINT		10	Time to ramp speed feedback when in Simulation (seconds).
Cfg_FailToStartT	DINT		15	Time after Start to get Run Feedback before Fault (seconds).
Cfg_FailToStopT	DINT		15	Time after Stop to drop Run Feedback before Fault (seconds).
Cfg_ResetPulseT	DINT		2	Time to pulse Out_Reset to clear drive fault (seconds).
Cfg_MaxJogT	REAL		0.0	Maximum jog time (seconds, 0 = unlimited).

Table 5 - P_PF52x Drive Input Parameters

Input Parameter	Data Type	Alias For	Default	Description
Cfg_OperKeep	SINT		2#0000_0000	1 = Operator keeps control in Program mode: Bit .0 = Reference Bit .1 = Start/Stop Bit .2 = Forward/Reverse
Cfg_ProgKeep	SINT		2#0000_0000	1 = Program keeps control in Operator mode: Bit .0 = Reference Bit .1 = Start/Stop Bit .2 = Forward/Reverse
PSet_SpeedRef	REAL		0.0	Program setting of speed reference (engineering units).
PSet_Owner	DINT		0	Program owner request ID (nonzero) or release (zero).
OSet_SpeedRef	REAL		0.0	Operator setting of speed reference (engineering units).
PCmd_Start	BOOL		0	When Cfg_PCmdClear is 1: • Set PCmd_Start to 1 to start the Drive • Set PCmd_Fwd to 1 to run the drive in the forward direction • Set PCmd_Rev to 1 to run the motor in the reverse direction • Set PCmd_Stop to 1 to stop the drive • These parameters are reset automatically When Cfg_PCmdClear is 0: • Set PCmd_Start to 1 to start the drive • Set PCmd_Rev to 0 to run the drive in the forward direction • Set PCmd_Rev to 1 to run the drive in the reverse direction • Set PCmd_Start to 0 to stop the drive • PCmd_Stop and PCmd_Fwd are not used • These parameters do not reset automatically
PCmd_Stop				
PCmd_Fwd				
PCmd_Rev				
PCmd_Acq	BOOL	Mode.PCmd_Acq	0	When Cfg_PCmdClear is 1: • Set PCmd_Acq to 1 to Acquire • Set PCmd_Rel to 1 to Release • These parameters reset automatically When Cfg_PCmdClear is 0: • Set PCmd_Acq to 1 to Acquire • Set PCmd_Acq to 0 to Release • PCmd_Rel is not used • These parameters do not reset automatically
PCmd_Rel		Mode.PCmd_Rel		
PCmd_Lock	BOOL	Mode.PCmd_Lock	0	When Cfg_PCmdClear is 1: • Set PCmd_Lock to 1 to Lock • Set PCmd_Unlock to 1 to Unlock • These parameters reset automatically When Cfg_PCmdClear is 0: • Set PCmd_Lock to 1 to Lock • Set PCmd_Lock to 0 to Unlock • PCmd_Unlock is not used • These parameters do not reset automatically
PCmd_Unlock		Mode.PCmd_Unlock		
PCmd_Reset	BOOL		0	• Set PCmd_Reset to 1 to reset all alarms that require reset • This parameter is always reset automatically
PCmd_FailToStartAck	BOOL	FailToStart.PCmd_Ack	0	• Set PCmd_<Alarm>Ack to 1 to Acknowledge alarm • The parameter is reset automatically
PCmd_FailToStopAck		FailToStop.PCmd_Ack		
PCmd_IntlkTripAck		IntlkTrip.PCmd_Ack		
PCmd_DriveFaultAck		DriveFault.PCmd_Ack		
PCmd_IOFaultAck		IOFault.PCmd_Ack		

Table 5 - P_PF52x Drive Input Parameters

Input Parameter	Data Type	Alias For	Default	Description
PCmd_FailToStartSuppress	BOOL	FailToStart.PCmd_Suppress	0	When Cfg_PCmdClear is 1: • Set PCmd_<Alarm>Suppress to 1 to suppress alarm • Set PCmd_<Alarm>Unsuppress to 1 to unsuppress alarm • These parameters reset automatically When Cfg_PCmdClear is 0: • Set PCmd_<Alarm>Suppress to 1 to suppress alarm • Set PCmd_<Alarm>Suppress to 0 to unsuppress alarm • PCmd_<Alarm>Unsuppress is not used • These Parameters do not reset automatically
PCmd_FailToStopSuppress		FailToStop.PCmd_Suppress		
PCmd_IntlkTripSuppress		IntlkTrip.PCmd_Suppress		
PCmd_DriveFaultSuppress		DriveFault.PCmd_Suppress		
PCmd_IOFaultSuppress		IOFault.PCmd_Suppress		
PCmd_FailToStartUnsuppress	BOOL	FailToStart.PCmd_Unsuppress	0	
PCmd_FailToStopUnsuppress		FailToStop.PCmd_Unsuppress		
PCmd_IntlkTripUnsuppress		IntlkTrip.PCmd_Unsuppress		
PCmd_DriveFaultUnsuppress		DriveFault.PCmd_Unsuppress		
PCmd_IOFaultUnsuppress		IOFault.PCmd_Unsuppress		
PCmd_FailToStartUnshelve	BOOL	FailToStart.PCmd_Unshelve	0	• Set PCmd_<Alarm>Unshelve to 1 to Unshelve alarm • The parameter is reset automatically
PCmd_FailToStopUnshelve		FailToStop.PCmd_Unshelve		
PCmd_IntlkTripUnshelve		IntlkTrip.PCmd_Unshelve		
PCmd_DriveFaultUnshelve		DriveFault.PCmd_Unshelve		
PCmd_IOFaultUnshelve		IOFault.PCmd_Unshelve		
OCmd_Start	BOOL		0	Operator command to start drive.
OCmd_Stop	BOOL		0	Operator command to stop drive.
OCmd_Jog	BOOL		0	Operator command to jog drive (not cleared by instruction if Cfg_MaxJogT = 0).
OCmd_Fwd	BOOL		0	Operator command to set direction to Forward.
OCmd_Rev	BOOL		0	Operator command to set direction to Reverse.
OCmd_Bypass	BOOL		0	Operator command to bypass all interlocks and permissives that can be bypassed.
OCmd_Check	BOOL		0	Operator command to check (not bypass) all interlocks and permissives.
MCmd_Disable	BOOL		0	Maintenance command to disable drive.
MCmd_Enable	BOOL		0	Maintenance command to enable (allow to run) drive.
MCmd_Acq	BOOL	Mode.MCmd_Acq	0	Maintenance command to acquire ownership (Operator/Program/Override to Maintenance).
MCmd_Rel	BOOL	Mode.MCmd_Rel	0	Maintenance command to release ownership (Maintenance to Operator/ Program/Override).
OCmd_AcqLock	BOOL	Mode.OCmd_AcqLock	0	Operator command to acquire (Program to Operator)/lock ownership.
OCmd_Unlock	BOOL	Mode.OCmd_UnlockRel	0	Operator command to unlock/release (Operator to Program) ownership.
OCmd_Reset	BOOL		0	Operator command to reset all alarms that require reset and trigger a drive reset if the drive is faulted.
OCmd_ResetAckAll	BOOL		0	Operator command to acknowledge and reset all alarms and latched Shed conditions.

PowerFlex 523/525 Variable Frequency Drives Output Structure

Output parameters include the following:

- Value data elements (Val_) are numeric outputs of the instruction for use by the HMI. Values can also be used by other application logic or software packages.
- Source and Quality data elements (SrcQ_) are outputs of the instruction that is used by the HMI to indicate PV source and quality.
- Status data elements (Sts_) are bit outputs of the instruction for use by the HMI. Status bits can also be used by other application logic.
- Error data elements (Err_) are outputs of the instruction that indicate a particular configuration error. If any Err_ bit is set, then the Sts_Err configuration error summary status is set and the Invalid Configuration indicator is displayed on the HMI.
- Not Ready data elements (Nrdy_) are bit outputs of the instruction for use by the HMI for displaying the Device Not Ready indicator. Status bits can also be used by other application logic.
- Alarm data elements (Alm_) are outputs of the instruction that indicate a particular alarm has occurred.
- Acknowledge data elements (Ack_) are outputs of the instruction that indicate the corresponding alarm has been acknowledged.
- Ready data elements (Rdy_) are bit outputs of the instruction used by the HMI to enable or disable Command buttons and Setting entry fields.

Table 6 - P_PF52x Drives Output Parameters

Output Parameter	Data Type	Alias For	Description
EnableOut	BOOL		Enable Output: The EnableOut signal is not manipulated by this instruction. Its output state always reflects EnableIn Input state.
Val_SpeedRef	REAL		Speed Reference (target) to drive (Speed Reference engineering units).
Val_SpeedFdbk	REAL		Speed Feedback (actual) from drive (Speed Feedback engineering units).
Val_SpeedRefRaw	REAL		Copy of Speed Reference Output (in Raw units) for faceplate.
Val_SpeedFdbkRaw	REAL		Copy of Speed Feedback Input (in Raw units) for faceplate.
Val_SpeedRefEUMin	REAL		Minimum of Speed Reference = Min (Cfg_SpeedFdbkEUMin, Cfg_SpeedFdbkEUMax). (Engineering units)
Val_SpeedRefEUMax	REAL		Maximum of Speed Reference = Max (Cfg_SpeedFdbkEUMin, Cfg_SpeedFdbkEUMax). (Engineering units)
Val_SpeedFdbkEUMin	REAL		Minimum of Speed Feedback = Min (Cfg_SpeedFdbkEUMin, Cfg_SpeedFdbkEUMax). (Engineering units)
Val_SpeedFdbkEUMax	REAL		Maximum of Speed Feedback = Max (Cfg_SpeedFdbkEUMin, Cfg_SpeedFdbkEUMax). (Engineering units)
Val_LastFaultCode	DINT		Last drive fault code (enumeration).
Val_OutCurrent	REAL		Drive output current (Amps).
Val_OutPower	REAL		Drive output power (kW).

Table 6 - P_PF52x Drives Output Parameters

Output Parameter	Data Type	Alias For	Description
SrcQ_IO	SINT		I/O signal source and quality.
SrcQ			Final drive status source and quality: GOOD 0 = I/O live and confirmed good quality 1 = I/O live and assumed good quality 2 = No feedback configured, assumed good quality TEST 8 = Device simulated 9 = Device loopback simulation 10 = Manually entered value UNCERTAIN 16 = Live input, off-specification 17 = Value substituted at device/bus 18 = Value substituted by maintenance (Has and not Use) 19 = Shed, using last good value 20 = Shed, using replacement value BAD 32 = Signal failure (out-of-range, NaN, invalid combination) 33 = I/O channel fault 34 = I/O module fault 35 = Bad I/O configuration (for example, scaling parameters)
Val_Cmd	SINT		Device command: 0 = None 1 = Stop 2 = Start forward 3 = Start reverse 4 = Jog forward 5 = Jog reverse
Val_Fdbk	SINT		Device feedback: 0 = Stopped 1 = Running forward 2 = Running reverse 3 = Accelerating 4 = Decelerating
Val_Sts	SINT		Device Confirmed Status: 0= Powerup/Unknown 1 = Stopped 2 = Running forward 3 = Running reverse 4 = Jogging forward 5 = Jogging reverse 6 = Stopping 7 = Starting forward 8 = Starting reverse 33 = Disabled
Val_Fault	SINT		Device fault status: 0 = None 16 = Fail to Start 17 = Fail to Stop 18 = Drive Fault 32 = I/O Fault 34 = Configuration Error

Table 6 - P_PF52x Drives Output Parameters

Output Parameter	Data Type	Alias For	Description
Val_Mode	SINT	Mode.Val	The current mode is shown with status bits and also as an enumeration 'Val_Mode' as follows: 0 = No mode 1 = Hand 2 = Maintenance 3 = Override 4 = Program (locked) 5 = Operator (locked) 6 = Program (unlocked, Operator is default) 7 = Operator (unlocked, Program is default) 8 = Program (unlocked, Program is default) 9 = Operator (unlocked, Operator is default)
Val_Owner	DINT		Current Object Owner ID (0 = not owned).
Val_Notify	SINT		Current alarm level and acknowledgement (enumeration): 0 = No alarm 1 = Alarm cleared: a reset or acknowledge is required 2 = Low (acknowledged) 3 = Low (unacknowledged) 4 = Medium (acknowledged) 5 = Medium (unacknowledged) 6 = High (acknowledged) 7 = High (unacknowledged) 8 = Urgent (acknowledged) 9 = Urgent (unacknowledged)
Sts_Stopped	BOOL		1 = Drive requested to stop and is confirmed stopped.
Sts_Starting	BOOL		1 = Drive requested to run and is waiting run for feedback.
Sts_Running	BOOL		1 = Drive requested to run and is confirmed running.
Sts_Stopping	BOOL		1 = Drive requested to stop and is waiting for stopped feedback.
Sts_Jogging	BOOL		1 = Drive requested to jog.
Sts_CommandDir	BOOL		1 = Drive commanded to Forward. 0 = Reverse.
Sts_ActualDir	BOOL		1 = Drive actual direction is Forward. 0 = Reverse.
Sts_Accel	BOOL		1 = Drive is accelerating.
Sts_Decel	BOOL		1 = Drive is decelerating.
Sts_NotReady	BOOL		1 = Drive is Not Ready (cannot be started), check alarms, stops, faults.
Sts_AtSpeed	BOOL		1 = Drive is running at reference speed.
Sts_SpeedLimited	BOOL		1 = Speed Reference setting exceeds configured Max/Min limit.
Sts_Digin1	BOOL		Drive Digital Input 1 Status
Sts_Digin2	BOOL		Drive Digital Input 2 Status
Sts_Digin3	BOOL		Drive Digital Input 3 Status
Sts_Digin4	BOOL		Drive Digital Input 4 Status
Sts_Available	BOOL		1 = Drive available for control by automation (Program).
Sts_Bypass	BOOL		1 = Interlocks and Permissives that can be bypassed are bypassed.
Sts_BypActive	BOOL		1 = Bypassing active (Bypassed or Maintenance).
Sts_Disabled	BOOL		1 = Drive is disabled.
Sts_NotRdy	BOOL		1 = Motor is Not Ready to Run (independent of mode), check interlocks and permissives.

Table 6 - P_PF52x Drives Output Parameters

Output Parameter	Data Type	Alias For	Description
Nrdy_Disabled	BOOL		1 = Device Not Ready: • Device Disabled by Maintenance • Configuration Error • Interlock Not OK • Permissive Not OK • Operator Stop Priority Command Requires Reset • Device Failure (Shed Requires Reset) • I/O Fault (Shed Requires Reset) • Device Tripped (Drive Fault) • Drive Not Ready • Device Logic Disabled/NO Mode
Nrdy_CfgErr			
Nrdy_Intlk			
Nrdy_Perm			
Nrdy_OperPrio			
Nrdy_Fail			
Nrdy_IOFault			
Nrdy_Trip			
Nrdy_DriveNR			
Nrdy_NoMode			
Sts_MaintByp	BOOL		1 = A Maintenance Bypass is active, display icon.
Sts_AlmInh	BOOL		1 = An alarm is Shelved, Disabled or Suppressed, display icon.
Sts_Err	BOOL		1 = Error in configuration: see detail bits for reason.
Err_Timer	BOOL		1 = Error in configuration: Invalid Check or Reset Pulse Time (use 0…2,147,483).
Err_Sim	BOOL		1 = Error in configuration: simulation timer preset: use 0…2,147,483).
Err_Alarm	BOOL		1 = Error in configuration: Alarm Minimum On time or severity.
Err_FdbkRaw	BOOL		1 = Error in configuration: Speed feedback raw minimum = maximum.
Err_FdbkEU	BOOL		1 = Error in configuration: Speed feedback engineering units minimum = maximum.
Err_RefLim	BOOL		1 = Error in configuration: Speed Ref Limit minimum > maximum.
Err_RefEU	BOOL		1 = Error in configuration: Speed Ref engineering units minimum = maximum.
Err_RefRaw	BOOL		1 = Error in configuration: Speed Ref Raw minimum = maximum.
Sts_Hand	BOOL	Mode.Sts_Hand	1 = Mode is Hand (supersedes Operator, Program, Override, and Maintenance).
Sts_Maint	BOOL	Mode.Sts_Maint	1 = Mode is Maintenance (supersedes Operator, Program, and Override).
Sts_Ovrd	BOOL	Mode.Sts_Ovrd	1 = Mode is Override (supersedes Operator and Program).
Sts_Prog	BOOL	Mode.Sts_Prog	1 = Mode is Program (automatic).
Sts_Oper	BOOL	Mode.Sts_Oper	1 = Mode is Operator (manual).
Sts_ProgOperLock	BOOL	Mode.Sts_ProgOperLock	1 = Program or operator has requested mode Lock.
Sts_NoMode	BOOL	Mode.Sts_NoMode	1 = No mode (disabled because EnableIn is False).
Sts_MAcqRcvd	BOOL	Mode.Sts_MAcqRcvd	1 = Maintenance Acquire command received this scan.
Sts_FailToStart	BOOL	FailToStart.Inp	1 = Drive failed to start.
Sts_FailToStop		FailToStop.Inp	1 = Drive failed to stop.
Sts_IntlkTrip		IntlkTrip.Inp	1 = Drive was stopped by an Interlock Not OK (One-Shot).
Sts_DriveFault		DriveFault.Inp	1 = Drive Fault (see drive display or manual).
Sts_IOFault		IOFault.Inp	I/O Comm Fault Status: 0 = OK 1 = Bad)

Table 6 - P_PF52x Drives Output Parameters

Output Parameter	Data Type	Alias For	Description
Alm_FailToStart	BOOL	FailToStart.Alm	1 = Drive Fail to Start alarm.
Alm_FailToStop		FailToStop.Alm	1 = Drive Fail to Stop alarm.
Alm_IntlkTrip		IntlkTrip.Alm	1 = Alarm: Drive stopped by an Interlock Not OK.
Alm_DriveFault		DriveFault.Alm	1 = Alarm: Drive Fault (see drive display or manual).
Alm_IOFault		IOFault.Alm	1 = I/O Fault alarm.
Ack_FailToStart	BOOL	FailToStart.Ack	1 = Fail to Start, Fail to Stop, Interlock Trip, Drive Fault, or I/O Fault alarm has been acknowledged.
Ack_FailToStop		FailToStop.Ack	
Ack_IntlkTrip		IntlkTrip.Ack	
Ack_DriveFault		DriveFault.Ack	
Ack_IOFault		IOFault.Ack	
Sts_FailToStartDisabled	BOOL	FailToStart.Disabled	1 = Fail to Start, Fail to Stop, Interlock Trip, Drive Fault, or I/O Fault alarm has been disabled (by maintenance).
Sts_FailToStopDisabled		FailToStop.Disabled	
Sts_IntlkTripDisabled		IntlkTrip.Disabled	
Sts_DriveFaultDisabled		DriveFault.Disabled	
Sts_IOFaultDisabled		IOFault.Disabled	
Sts_FailToStartShelved	BOOL	FailToStart.Shelved	1 = Fail to Start, Fail to Stop, Interlock Trip, Drive Fault, or I/O Fault alarm has been shelved (by operator).
Sts_FailToStopShelved		FailToStop.Shelved	
Sts_IntlkTripShelved		IntlkTrip.Shelved	
Sts_DriveFaultShelved		DriveFault.Shelved	
Sts_IOFaultShelved		IOFault.Shelved	
Sts_FailToStartSuppressed	BOOL	FailToStart.Suppressed	1 = Fail to Start, Fail to Stop, Interlock Trip, Drive Fault, or I/O Fault alarm has been suppressed (by program).
Sts_FailToStopSuppressed		FailToStop.Suppressed	
Sts_IntlkTripSuppressed		IntlkTrip.Suppressed	
Sts_DriveFaultSuppressed		DriveFault.Suppressed	
Sts_IOFaultSuppressed		IOFault.Suppressed	
Rdy_Start	BOOL		1 = Ready to receive OCmd: Start, Stop, Jog, Forward, Reverse, Bypass, or Check (enables HMI button).
Rdy_Stop			
Rdy_Jog			
Rdy_Fwd			
Rdy_Rev			
Rdy_Bypass			
Rdy_Check			
Rdy_Disable	BOOL		1 = Ready to receive MCmd Disable or Enable (enables HMI button).
Rdy_Enable			
Rdy_Reset	BOOL		1 = Ready to receive OCmd_Reset (enables HMI button).
Rdy_ResetAckAll	BOOL		1 = At least one alarm or latched Shed condition requires Reset or Acknowledged.
Rdy_SpeedRef	BOOL		1 = Ready to receive OSet_SpeedRef (enables data entry field).
P_PF52x	BOOL		Unique Parameter Name for auto-discovery.

PowerFlex 523/525 Variable Frequency Drives Local Configuration Tags

Configuration parameters that are array, string, or structure data types cannot be configured as parameters for Add-On Instructions. Configuration parameters of these types appear as local tags to the Add-On Instruction. Local tags can be configured through the HMI faceplates or in RSLogix™ 5000 software. Open the instruction logic of the Add-On Instruction instance and then open the Data Monitor on a local tag to accomplish this configuration. These parameters cannot be modified by using controller logic or RSLogix 5000 software export/import functionality.

Table 7 - P_PF52x Drive Local Configuration Tags

Tag Name	Data Type	Default	Description
Cfg_Desc	STRING_40	'PF523/PF525 Variable Frequency Drive'	Description for display on HMI. This string is shown in the title bar of the faceplate.
Cfg_Digin1Txt	STRING_20	'Digital Input 1'	Name for digital input 1 label.
Cfg_Digin2Txt	STRING_20	'Digital Input 2'	Name for digital input 2 label.
Cfg_Digin3Txt	STRING_20	'Digital Input 3'	Name for digital input 3 label.
Cfg_Digin4Txt	STRING_20	'Digital Input 4'	Name for digital input 4 label.
Cfg_FwdText	STRING_16	'Forward'	Name for forward direction, for example, 'Up', or 'Forward'.
Cfg_Label	STRING_20	'Motor Speed Control'	Label for graphic symbol that is displayed on HMI. This string appears on the graphic symbol.
Cfg_RevText	STRING_16	'Reverse'	Name for reverse direction, for example, 'Down' or 'Reverse'.
Cfg_SpeedFdbkEU	STRING_8	'Hz'	Speed feedback engineering units for display on HMI.
Cfg_SpeedRefEU	STRING_8	'Hz'	Speed reference engineering units for display on HMI.
Cfg_Tag	STRING_20	'P_PF52x'	Tag name for display on HMI. This string is shown in the title bar of the faceplate.

Operations

This section describes the primary operations for Add-On Instructions.

Modes

The P_PF52x Add-On Instruction uses the following standard modes, which are implemented by using an embedded P_Mode Add-On Instruction.

Graphic Symbol	Description
Operator mode	Control of the device is owned by the Operator. Operator Commands (OCmd_) and Operator Settings (OSet_) from the HMI are accepted.
Program mode	Control of the device is owned by Program logic. Program Commands (PCmd_) and Program Settings (PSet_) are accepted.
Override mode	Control of the device is owned by priority logic, superseding Operator and Program control. Override Inputs (Inp_OvrdCmd and other Inp_OvrdXxxx values) are accepted. If so configured, interlocks and permissives that can be bypassed are bypassed.
Maintenance mode	Control of the device is owned by Maintenance. Operator Commands and Settings from the HMI are accepted. Interlocks and permissives that can be bypassed are bypassed, and device timeout checks are not processed.
Hand mode	Control of the device is owned by hardwired logic or other logic outside the instruction. The instruction tracks the state of the device for bumpless transfer back to one of the other modes.
No mode	The device is disabled and has no owner because the EnableIn input is false. The main instruction Logic routine is not being scanned. See Execution for more information on EnableInFalse processing.

TIP Certain aspects of drive operation can be kept with the Operator or with the Program regardless of the instruction Mode. See the Cfg_OperKeep parameter on page 16 and the Cfg_ProgKeep parameter on page 16 for more information.

See the Rockwell Automation Library of Process Objects: Common Mode Block (P_Mode) Reference Manual, publication SYSLIB-RM005, for more information.

Alarms

The P_PF52x instruction uses the following alarms, which are implemented by using embedded P_Alarm Add-On Instructions.

Alarm	P_Alarm Name	Description
Fail to Start	FailToStart	The alarm is raised if one of the following occurs: • If the drive has and is using run feedback. • An attempt is made to start the drive. • The run feedback does not indicate that the drive is running within the configured time.
Fail to Stop	FailToStop	The alarm is raised if one of the following occurs: • If the drive has and is using run feedback. • An attempt is made to stop the drive. • The run feedback does not indicate that the drive stopped within the configured time.
I/O Fault	IOFault	Raised if the Inp_IOFault input is true.
Drive Fault	DriveFault	Raised if the Inp_Faulted input is true. Enables display of the Drive fault code and Fault description.
Interlock Trip	IntlkTrip	Raised if the drive is running and an interlock causes it to stop. If interlocks are not bypassed, an interlock (that cannot be bypassed) not OK (Inp_NBIntlkOK = 0) or an interlock (can be bypassed) not OK (Inp_IntlkOK = 0) stops the drive. If interlocks are bypassed, only an interlock (cannot be bypassed) not OK (Inp_NBIntlkOK = 0) stops the drive.

See the Rockwell Automation Library of Graphic Objects: Common Alarm Block (P_Alarm) Reference Manual, publication SYSLIB-RM002, for more information.

Simulation

Simulation in the P_PF52x Add-On Instruction disables the normal output and provides the feedback of a working drive

Set the Inp_Sim parameter in the controller to '1' to enable simulation. The Simulation icon is displayed at the bottom left of the Operator faceplate, and indicates the device is in simulation.

You can also use the following parameters in simulation:

- Cfg_SimScaleEU to scale Speed Reference engineering units to Speed Feedback engineering units
- Cfg_SimScaleRaw to scale Speed Reference engineering units to raw and then raw to Speed Feedback engineering units
- Cfg_SimRampT to set the time in seconds to ramp speed feedback

When you have finished in simulation, set the Inp_Sim parameter in the controller to '0' to return to normal operation.

Execution

The following table explains the handling of instruction execution conditions.

Condition	Description
EnableIn False (false rung)	Processing for EnableIn False (false rung) is handled the same as if the drive were Disabled by Command. The drive outputs are de-energized and the drive is shown as disabled on the HMI.
Powerup (prescan, first scan)	Processing of modes and alarms on prescan and Powerup is handled by the embedded P_Mode and P_Alarm Add-On Instructions. See their specifications for details. On Powerup, the drive is treated as if it had been Commanded to Stop.
Postscan (SFC transition)	No SFC Postscan logic is provided.

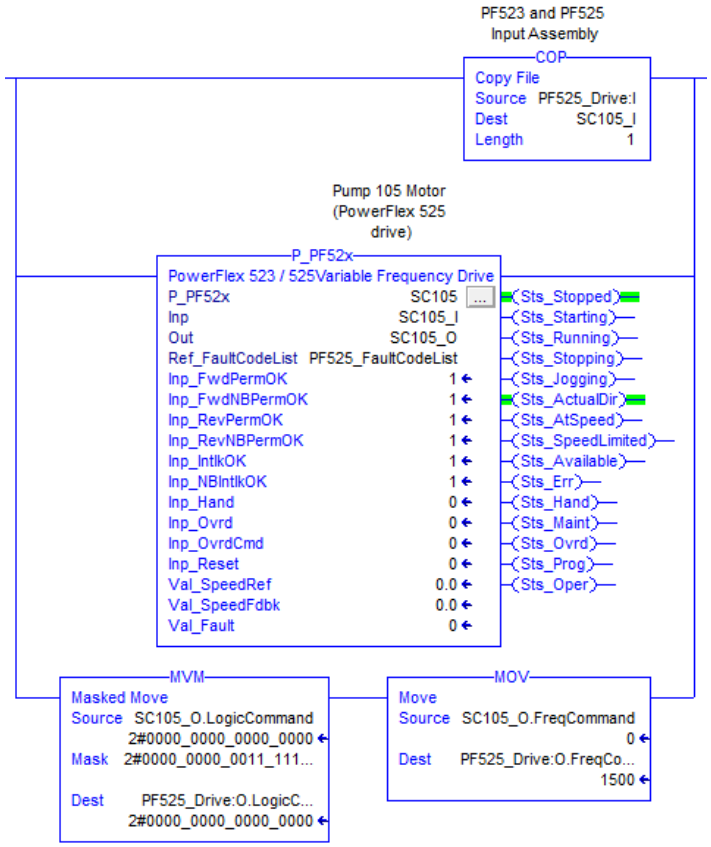
See the Logix5000 Controllers Add-On Instructions Programming Manual, publication 1756-PM010, for more information.

Programming Example

The following example shows the P_PF52x in ladder context. Here, ladder logic is used to copy the drive input data from the input assembly tag to a buffer tag of type P_PF52x_Inp.

Next, the P_PF52x Add-On Instruction executes.

Finally, the drive command bits used by the P_PF52x instruction and the drive speed reference are copied out to the drive. A buffer tag of type P_PF52x_Out is used.



Display Elements

The P_PF52x instruction uses the same HMI display elements that are used for the Variable Speed Drive (P_VSD) instruction.

A display element (global object) is created once and can be referenced multiple times on multiple displays in an application. When changes are made to the original (base) object, the instantiated copies (reference objects) are automatically updated. Use of global objects, in conjunction with tag structures in the ControlLogix system, aid consistency and save engineering time.

Table 8 - P_PF52x Drive Display Elements Description

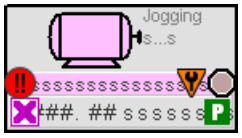
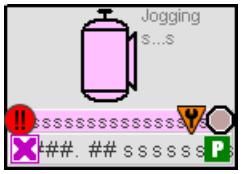
Display Element Name	Display Element	Description
GO_P_VSD_R		These display elements show the different motor positions (right, up, and down).
GO_P_VSD_U		
GO_P_VSD_D		
GO_P_VSD_Blower_R		These display elements show the different blower positions (right, left, up, and down).
GO_P_VSD_Blower_L		
GO_P_VSD_Blower_U		
GO_P_VSD_Blower_D		
GO_P_VSD_Conveyer_R		This display element illustrates a conveyer.

Table 8 - P_PF52x Drive Display Elements Description

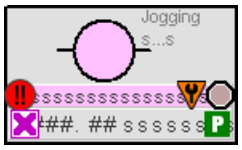
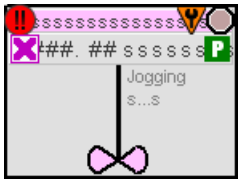
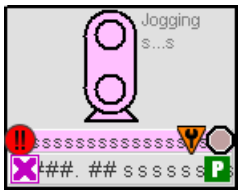
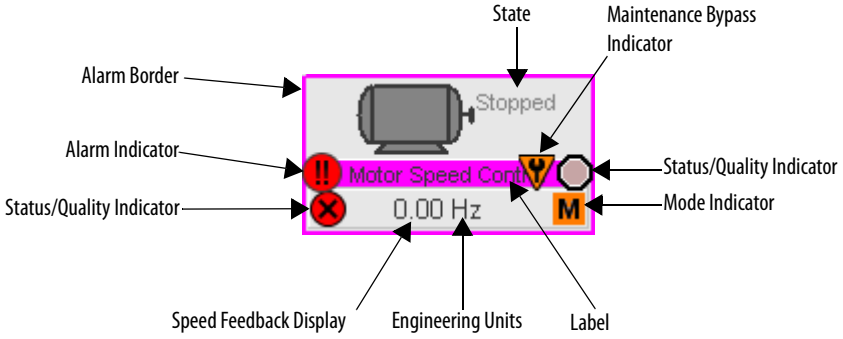
Display Element Name	Display Element	Description
GO_P_VSD_Inline_U		These display elements show the different inline motor positions (up, right, left, and down).
GO_P_VSD_Inline_R		
GO_P_VSD_Inline_L		
GO_P_VSD_Inline_D		
GO_P_VSD_Pump_R		These display elements show the different pump positions (right, left, and up).
GO_P_VSD_Pump_L		
GO_P_VSD_Pump_U		
GO_P_VSD_Agitator_D		This display element illustrates an agitator in the down position.
GO_P_VSD_Mixer_U		This display element shows a mixer in the up position.

Table 8 - P_PF52x Drive Display Elements Description

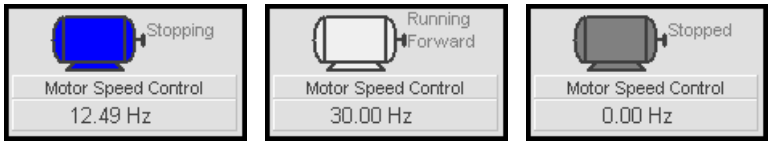
Display Element Name	Display Element	Description
GO_P_VSD_RPump_U		This display element shows a rotary gear pump in the up position.
GO_P_VSD_Fan_D		This display element shows a fan in the down position.

Common attributes of the P_PF52x global objects include the following:

- Graphical representation of the driven equipment
- Speed feedback display with engineering units
- Status/quality indicators
- Mode indicator
- Maintenance Bypass indicator
- State
- Label
- Alarm border that changes color and blinks on unacknowledged alarm
- Alarm indicator that changes color with the severity of an alarm



State Indicators



The State Indicator text changes and the display element color changes depending on the state of the drive.

Color	State
Blue	Stopping
Dark gray	Stopped
Light blue	Jogging
Blue	Starting
White	Running

Status/Quality Indicators

Each of these symbols appears when the described condition is true.

Graphic Symbol	Description
	Invalid configuration
	I/O Fault
	I/O uncertain
	The device is not ready to operate (Device Not Ready)
	Speed reference limited to minimum/maximum
	Drive is at target speed
	Drive is accelerating
	Drive is decelerating
	Drive is disabled
No symbol displayed	I/O quality good and configuration valid

TIP When the Invalid Configuration Indicator appears, you can find what configuration setting is invalid by following the indicators. Click the graphic symbol to open the faceplate. The Invalid Configuration indicator appears next to the appropriate tab at the top of the faceplate to help you find the configuration error. Once you navigate to the tab, the misconfigured item is flagged with this indicator or appears in a magenta box.

For the PowerFlex 523/525 Variable Frequency Drives Instruction, the Invalid Configuration indicator appears under the following conditions:

- The Fail to Start check time, Fail to Stop check time, Reset Pulse time, or Maximum Jog time is set to a value less than zero or greater than 2,147,483 seconds.
- The Speed Feedback Raw Minimum and Raw Maximum scaling parameters are set to the same value.
- The Speed Feedback Scaled Engineering Units Minimum and Engineering Units Maximum scaling parameters are set to the same value.
- The Speed Reference Raw Minimum and Raw Maximum scaling parameters are set to the same value.
- The Speed Reference Scaled Engineering Units Minimum and Engineering Units Maximum scaling parameters are set to the same value.
- The Maximum Speed Reference clamp value is less than the Minimum Speed Reference clamp value, or either clamp value is less than zero.
- The Simulated Speed Ramp Time is set to a value less than zero or greater than 2,147,483 seconds.
- An Alarm Minimum On Time is set to a value less than zero or greater than 2,147,483 seconds.
- Alarm Severity is set to a value less than 1 or greater than 1000.

TIP When the Not Ready indicator appears, you can find what condition is preventing operation by following the indicators. Click the graphic symbol to open the faceplate. The Not Ready indicator appears next to the appropriate tab at the top of the faceplate to help you find the condition. When you navigate to the tab, the condition preventing operation is flagged.

For the PowerFlex 523/525 Variable Frequency Drives Instruction, the Device Not Ready indicator appears under the following conditions:

- Device has been disabled by Maintenance.
- There is a configuration error.
- An Interlock or Permissive is not OK.
- Operator Stop Priority command requires reset.
- There is a Device Failure or I/O Fault and Shed requires reset.
- The device has been tripped resulting in a Drive Fault.
- Drive not ready.
- Device logic disabled or there is no mode.

Maintenance Bypass Indicator

This symbol appears to the right of the Label to indicate that a Maintenance Bypass has been activated.

Graphic Symbol	Description
	A Maintenance Bypass is active
No symbol displayed	No Maintenance Bypass active

TIP When the Maintenance Bypass Indicator appears, you can find what condition was bypassed by following the indicators. Click the graphic symbol to open the faceplate. The Maintenance Bypass Indicator appears next to the appropriate tab at the top of the faceplate to help you find the bypass. Once you navigate to the tab, the bypassed item is flagged with this indicator.

For the PowerFlex 523/525 Variable Frequency Drives Instruction, the Maintenance Bypass Indicator appears when interlocks and permissives that can be bypassed have been bypassed.

Mode Indicators

One of these symbols appears to the right of the graphic symbol to indicate the mode of the object instruction.

Graphic Symbol	Description
Transparent	Operator mode (if the default mode is Operator and in Operator mode, the mode indicator is transparent)
	Operator mode (if the default mode is Program)
	Operator mode locked
Transparent	Program mode (if the default mode is Program and in Program mode, the mode indicator is transparent)
	Program mode (if the default mode is Operator)
	Program mode locked
	Override mode
	Maintenance mode
	Hand mode
	No mode

TIP The images provided for the Operator and Program default modes are transparent; therefore, no mode indicators appear if the device is in its default mode. This behavior can be changed by replacing these mode indicators with images that are not transparent.

Alarm Indicators

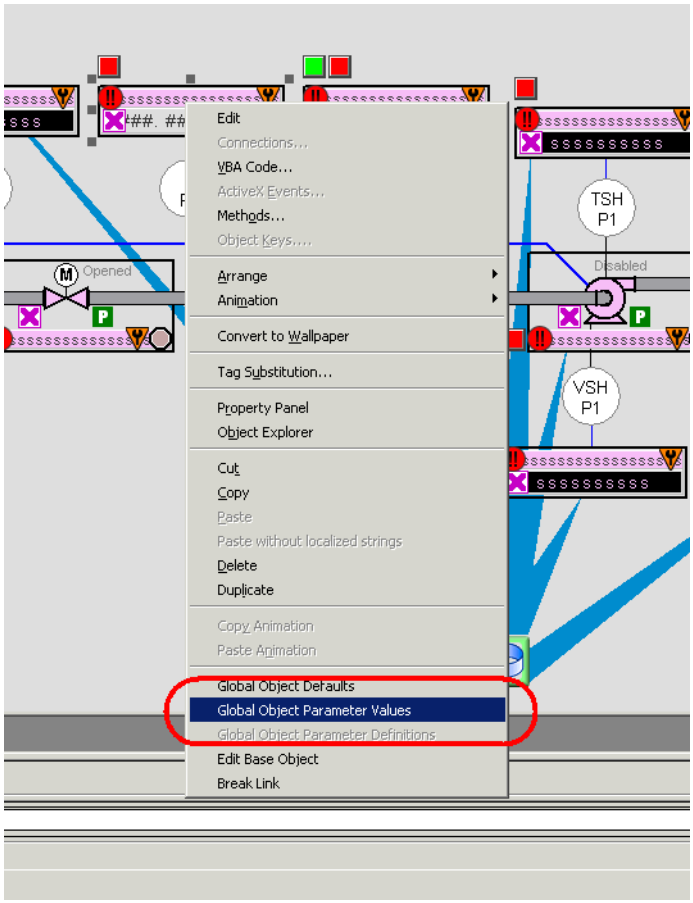
One of these symbols appears to the left of the Label to indicate the described alarm condition. The alarm border and label background blink if Acknowledgment of an alarm condition is required.

Symbol	Border and Label Background	Description
	No change in color	Alarm Inhibit: an alarm is suppressed by the Program, disabled by Maintenance, or shelved by the Operator.
	White	Return to normal (no alarm condition), but a previous alarm has not been acknowledged.
	Blue	Low severity alarm.
	Yellow	Medium severity alarm.
	Red	High severity alarm.
	Magenta	Urgent severity alarm.
No symbol	No change in color	No alarm or alarm inhibit condition, and all alarms are acknowledged.

Using Display Elements

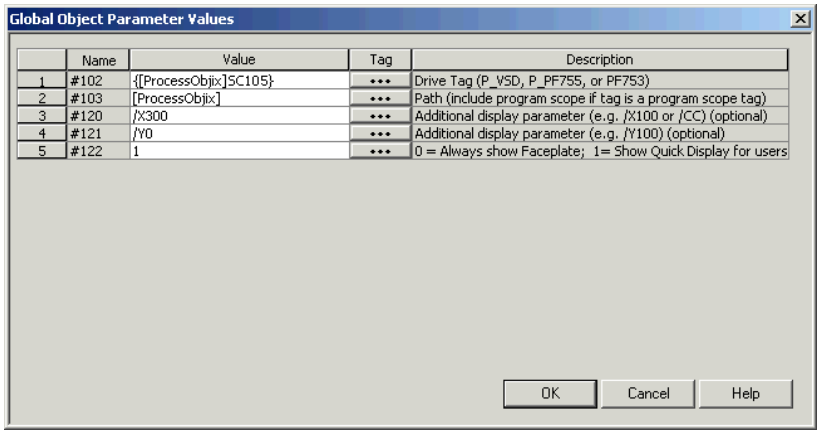
The global objects for P_PF52x can be found in the global object file (RA-BAS) P_VSD Graphics Library.ggfx for FactoryTalk View SE. Follow these steps to use a global object.

1. Copy the global object from the global object file and paste it in the display file.



2. In the display, right-click the global object and choose Global Object Parameter Values.

The Global Object Parameter Values dialog box appears.


Global Object Parameter Values
Name
Value
Tag
Description
1 #102 {[ProcessObjix]SC105} ••• Drive Tag (P_VSD, P_PF755, or PF753)
2 #103 [ProcessObjix] ••• Path (include program scope if tag is a program scope tag)
3 #120 /X300 ••• Additional display parameter (e.g. /X100 or /CC) (optional)
4 #121 /Y0 ••• Additional display parameter (e.g. /Y100) (optional)
5 #122 1 ••• 0 = Always show Faceplate; 1= Show Quick Display for users
OK
Cancel
Help

The global object parameters are as follows.

Parameter	Required	Description
#102	Y	Object tag to point to the name of the associated object Add-On Instruction in the controller.
#103	Y	Path that is used for display navigation features to other objects. Include program scope if tag is a program scope tag.
#120	N	Additional parameter to pass to the display command to open the faceplate. Typically used to define position for the faceplate.
#121	N	Additional parameter to pass to the display command to open the faceplate. When you define the X and Y coordinate, separate parameters so that #120 defines X and #121 defines Y. This definition lets the same parameters be used in subsequent display commands that originate from the faceplate.
#122	Y	The options for the global object display are as follows: 0 = Always show faceplate 1 = Show Quick Display for users without Maintenance access (Code C) 2 = Always show Quick Display

3. Type the tag or value in the Value column as specified in the Description column.

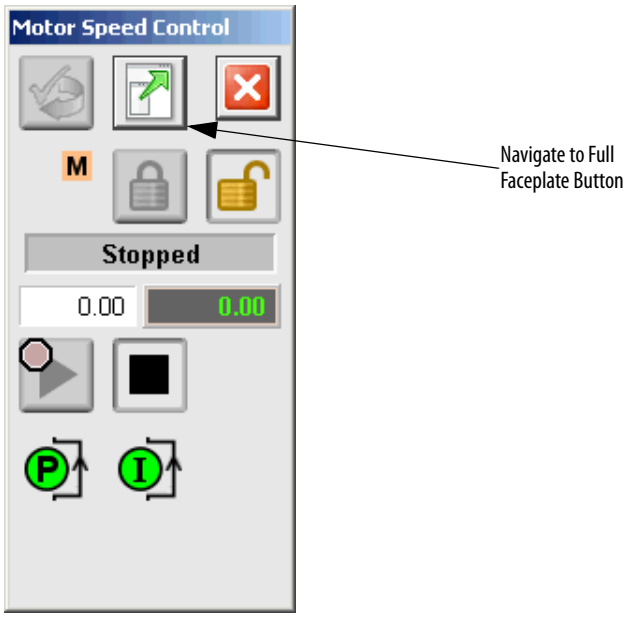
TIP You can click the ellipsis (…) to browse and select a tag.

Values for items marked '(optional)' can be left blank.

4. Click OK.

Quick Display

The Quick Display screen provides the means for operators to perform simple interactions with the P_PF52x instruction instance. From the Quick Display, you can navigate to the faceplate for full access for operation, maintenance, and configuration.

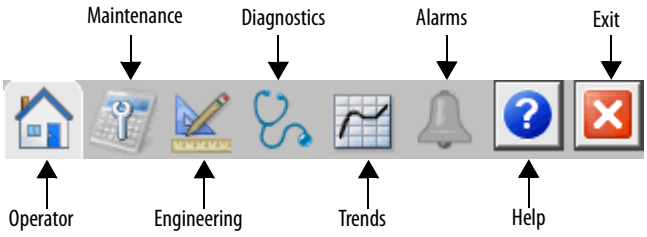


Faceplate

The P_PF52x faceplate consists of six tabs and each tab consists of one or more pages.

The title bar of the faceplate contains the value of local configuration tags Cfg_Tag and Cfg_Desc.

The Operator tab is displayed when the faceplate is initially opened. Click the appropriate icon at the top of the faceplate to access a specific tab.



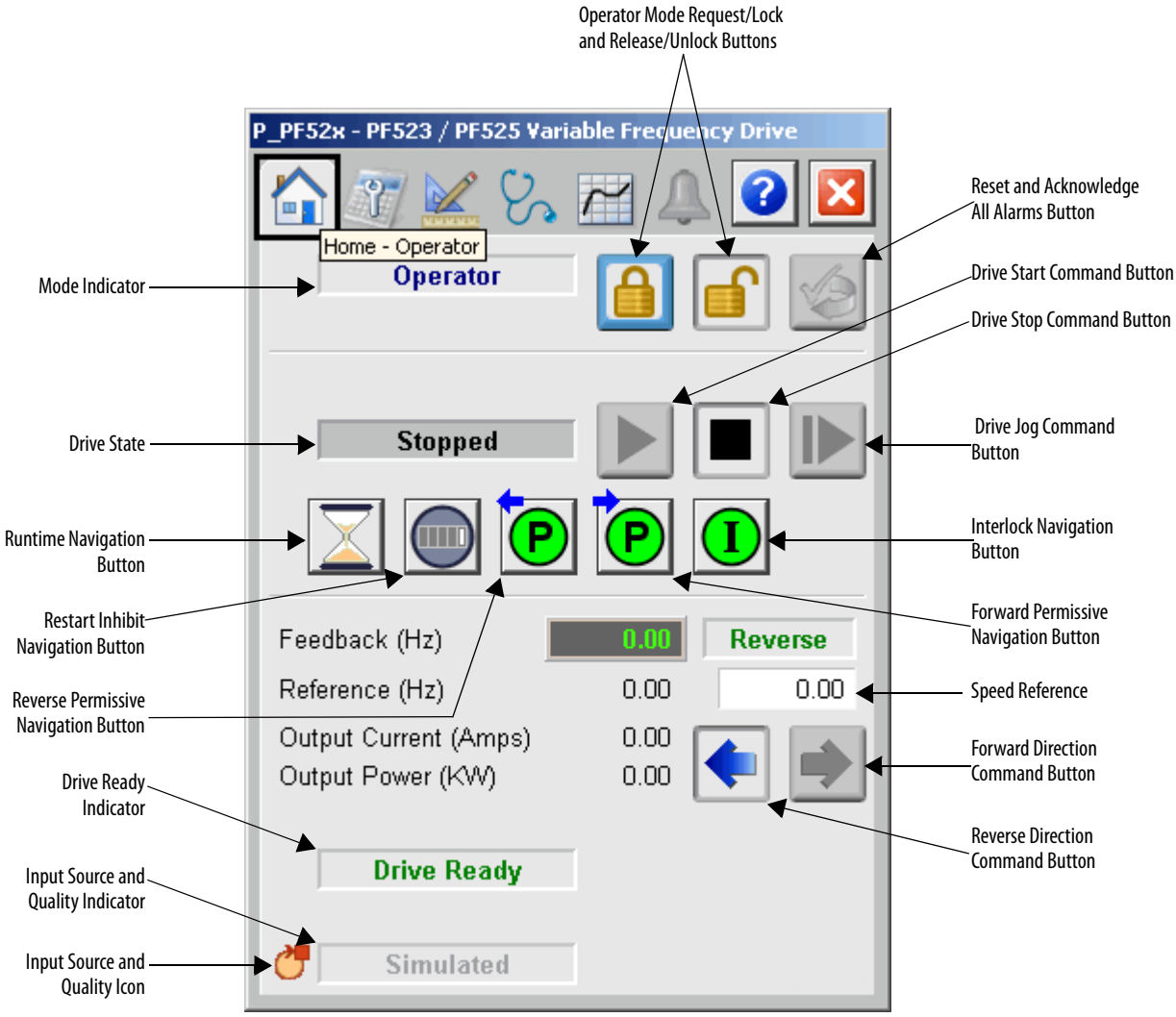
The faceplate provides the means for operators, maintenance workers, engineers, and others to interact with the P_PF52x instruction instance. You can also view its status and values and manipulate it through its commands and settings. When a given input is restricted via FactoryTalk View security, the required user security-code letter is shown in the tables that follow.

Operator Tab

The Faceplate initially opens to the Operator ('Home') tab. From here, an operator can monitor the device status and manually operate the device when it is in Operator mode.

The Operator tab shows the following information:

- Current mode (Operator, Program, Override, Maintenance, or Hand)
- Requested mode indicator (appears only if the Operator or Program mode has been superseded by another mode)
- Drive State (Stopping, Stopped, Starting, Running, Disable, or I/O Fault)
- Drive Motion State (Accelerating, Decelerating, or At Speed)
- Drive Ready indicator (Drive Ready, Drive Not Ready, or Drive Faulted)
- Actual speed and requested speed
- Actual direction and requested direction (appears only if the drive is configured to allow running in reverse)
- Input Source and Quality indicator (See 'SrcQ' in the Output parameters table on page 19 for details)



The following table shows the functions included on the Operator tab.

Table 9 - Operator Tab Description

Function	Action	Security
	Click to release Operator mode lock.	Manual Device Operation (Code B)
	Click to lock in Operator mode.	
	Click to request Program mode.	
	Click to request Operator mode.	

Table 9 - Operator Tab Description

Function	Action	Security
	Click to reset and acknowledge all alarms.	Acknowledge Alarms (Code F)
	Click to Start drive.	Normal Operation of Devices (Code A)
	Click to Stop drive.	
	Click to Jog drive.	
	Click to select forward direction.	
	Click to select reverse direction.	
	Click to open Reverse Permissive faceplate.	None
	Click to open Forward Permissive faceplate.	
	Click to open Interlock faceplate.	
	Click to open runtime faceplate.	
	Click to open Restart Inhibit faceplate.	
Reference (Hz)	Type the desired speed in engineering units.	

If the object is configured to have permissive and interlock objects (for example, Cfg_HasIntlkObj is true), the permissive and interlock indicators become buttons. These buttons open the faceplates of the source objects that are used as a permissive or interlock (often this is a P_Intlk or P_Perm object). If the object is not configured in this way, the permissive or interlock are indicators only.

The Operator tab also has a button to open the Restart Inhibit faceplate if the drive is configured to use the P_ResInh object (Cfg_HasResInh = 1). When the object is not configured to have an P_ResInh instruction, the Restart Inhibit button is not displayed.

The Operator tab also has a button to open the runtime faceplate if the drive is configured to use the P_RunTime object (Cfg_HasRunTime = 1). When the object is not configured to have an P_RunTime instruction, the runtime button is not displayed.

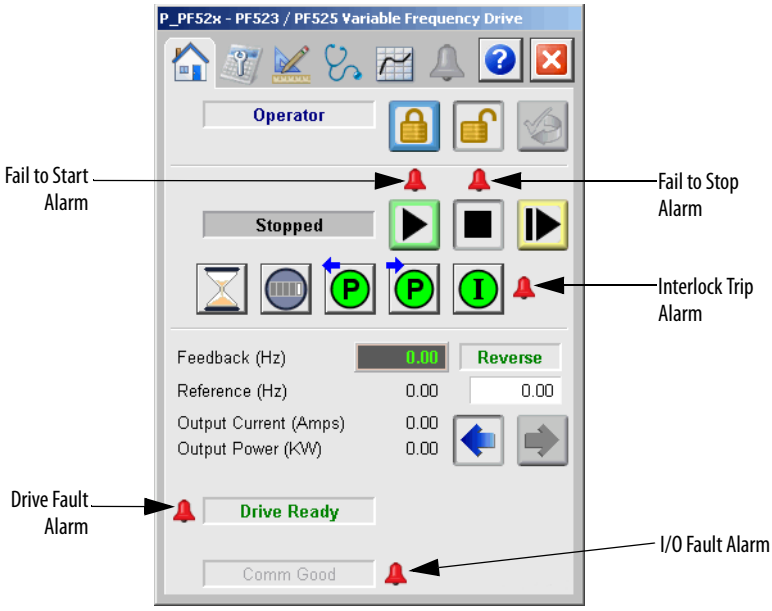
Refer to these publications for more information:

- Rockwell Automation Library of Process Objects: Interlock with First Out and Bypass (P_Intlk) Reference Manual, publication SYSLIB-RM004
- Rockwell Automation Library of Process Objects: Permissives with Bypass (P_Perm) Reference Manual, publication SYSLIB-RM007
- Rockwell Automation Library of Process Objects: Restart Inhibit for Large Motor (P_ResInh) Reference Manual, publication SYSLIB-RM009
- Rockwell Automation Library of Process Objects: RunTime and Starts (P_RunTime) Reference Manual, publication SYSLIB-RM010

One of these symbols appears to indicate the described Interlock or Permissive condition.

Permissive Symbol	Interlock Symbol	Description
		One or more conditions not OK
		Non-bypassed conditions OK
		All conditions OK, bypass active
		All conditions OK

Alarm indicators appear on the Operator tab when the corresponding alarm occurs.



The following table shows the alarm status on the Operator tab.

Table 10 - Operator Tab Alarm Status

Graphic Symbol	Alarm Status
	In Alarm (Active Alarm)
	In Alarm and Acknowledged
	Out of Alarm but not Acknowledged
	Alarm Suppressed (by Program) (Alarm is logged but not displayed)
	Alarm Disabled (by Maintenance)
	Alarm Shelved (by Operator)

Maintenance Tab

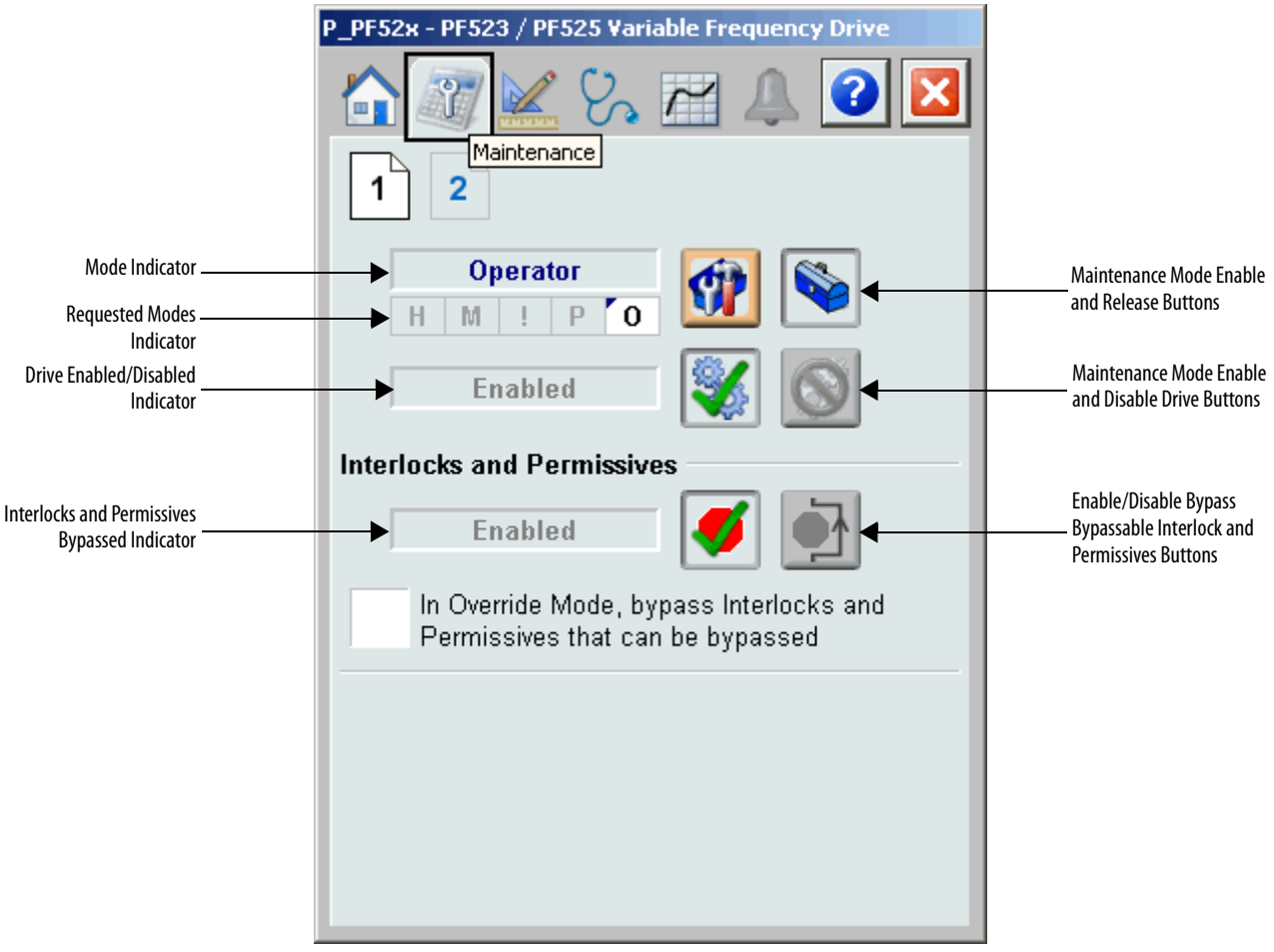
Maintenance personnel use the information and controls on the Maintenance tab to make adjustments to device parameters. They also troubleshoot and temporarily work around device problems, and disable the device for routine maintenance.

The Maintenance tab is divided into two pages.

Maintenance Tab Page 1

Page 1 of the Maintenance tab shows the following information:

- Current mode (Operator, Program, Override, Maintenance, or Hand).
- Requested modes Indicator - This display highlights all modes that have been requested. The leftmost highlighted mode is the active mode.
- Whether the motor is enabled or disabled.
- Interlock and Permissive Bypassed/Enabled indicator.

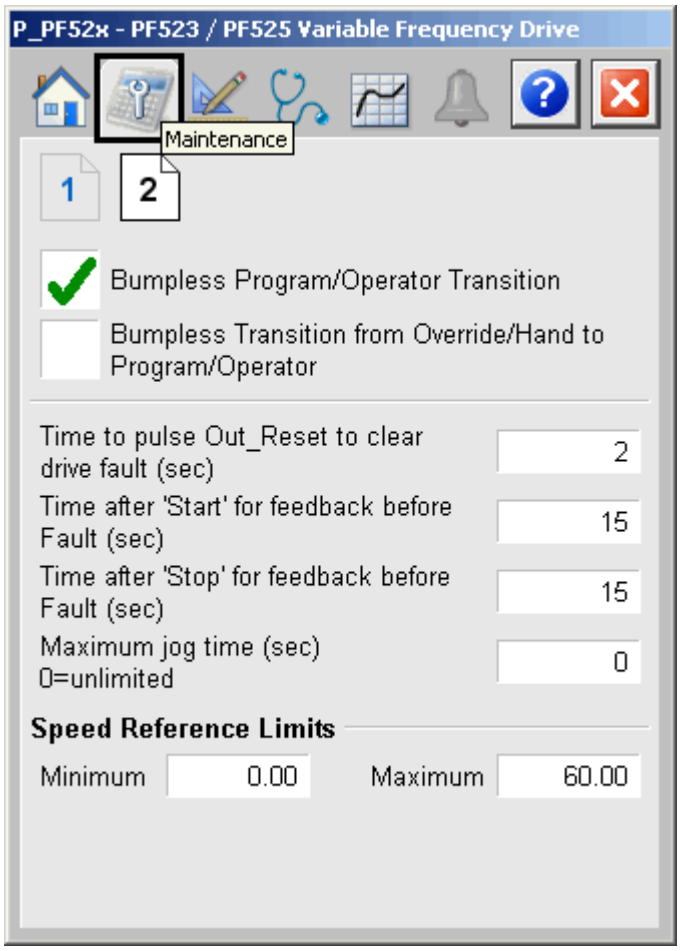


The following table shows the functions on page 1 of the Maintenance tab.

Table 11 - Maintenance Tab Page 1 Description

Function	Action	Security	Configuration Parameters
	Click for Maintenance mode.	Equipment Maintenance (Code C)	None
	Click to release Maintenance mode.		
	Click to enable drive.		
	Click to disable drive.		
	Click to enable checking of all interlocks and permissives.	Disable Alarms Bypass Permissives and Interlocks (Code H)	None
	Click to bypass checking of interlocks and permissives that can be bypassed.		
In Override mode, bypass Interlocks and Permissives that can be bypassed	Check to have the interlocks and permissives that can be bypassed, bypassed in Override mode.		Cfg_OvrdPermIntlk

Maintenance Tab Page 2



The following table shows the functions on page 2 of the Maintenance tab.

Table 12 - Maintenance Tab Page 2 Description

Function	Action	Security	Configuration Parameters
Bumpless Program/ Operator Transition	Check to have program settings, such as Speed Reference, track operator settings in Operator mode, and have operator settings track Program Settings in Program mode.	Equipment Maintenance (Code C)	Cfg_SetTrack
Bumpless Transition from Override/Hand to Program/Operator	Check to have the Program and Operator Speed Reference track the Override Speed Reference in Override mode or the actual speed in Hand mode.		Cfg_SetTrackOvrdHand
Time to pulse Out_Reset to clear drive fault (seconds)	Type the amount of time to hold Out_Reset true to reset a drive fault when a reset command is received.	Configuration & Tuning Maintenance (Code D)	Cfg_ResetPulseT
Time after 'Start' for Feedback before Fault (seconds)	Type the amount of time for the drive's run feedback to confirm that the drive has started before raising a Fail to Start alarm.		Cfg_FailToStartT

Table 12 - Maintenance Tab Page 2 Description

Function	Action	Security	Configuration Parameters
Time after 'Stop' for Feedback before Fault (seconds)	Type the amount of time for the drive's run feedback to confirm that the drive has stopped before raising a Fail to Stop alarm.	Configuration & Tuning Maintenance (Code D)	Cfg_FailToStopT
Maximum jog time (seconds) 0 = unlimited	Type the maximum time (in seconds) that the drive can be jogged by using OCmd_Jog. **IMPORTANT:** This value stops drive jogging if HMI communication is lost during a jog.		Cfg_MaxJogT
Speed Reference Limits (Minimum and Maximum)	Type the clamping limits for the speed reference. If a speed reference outside this range is entered, the speed is clamped at these limits and Sts_SpeedLimited is asserted.		• Cfg_MaxSpdRef • Cfg_MinSpdRef

Engineering Tab

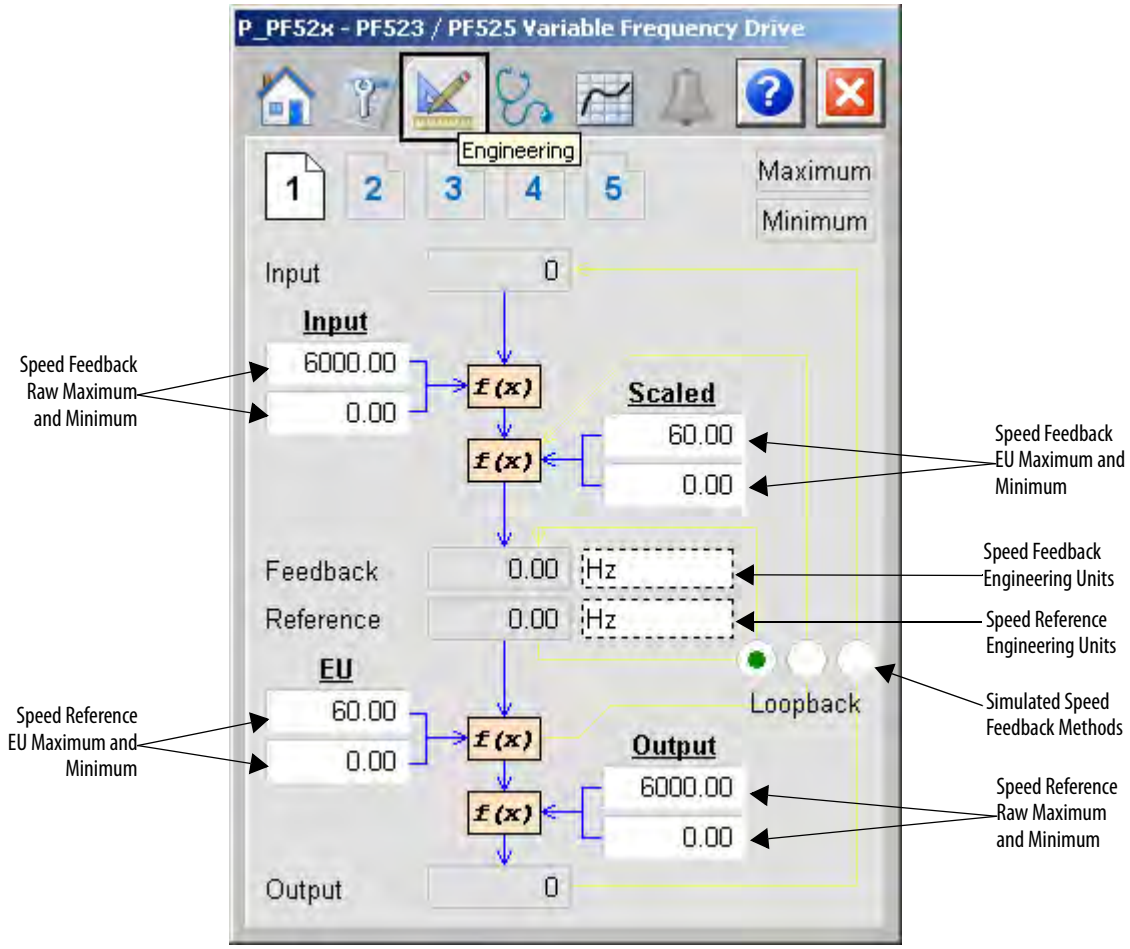
The Engineering tab provides access to device configuration parameters and ranges, options for device and I/O setup, displayed text, and faceplate-to-faceplate navigation settings, and for initial system commissioning or later system changes.

The Engineering tab is divided into five pages.

Engineering Tab Page 1

Page 1 of the Engineering tab is used to set the Speed Reference (output) scaling, from user Engineering Units used on the faceplate (typically Hz, RPM, or percent) to Raw Units (counts) sent to the drive. Page 1 is also used to set the Speed Feedback (input) scaling, from Raw Units as received from the drive (counts) to Engineering Units for display (typically Hz, RPM, or Percent).

Check the manual for your drive to determine what count sent to the drive corresponds to your maximum speed reference. Also check what count received from the drive corresponds to your maximum speed feedback.

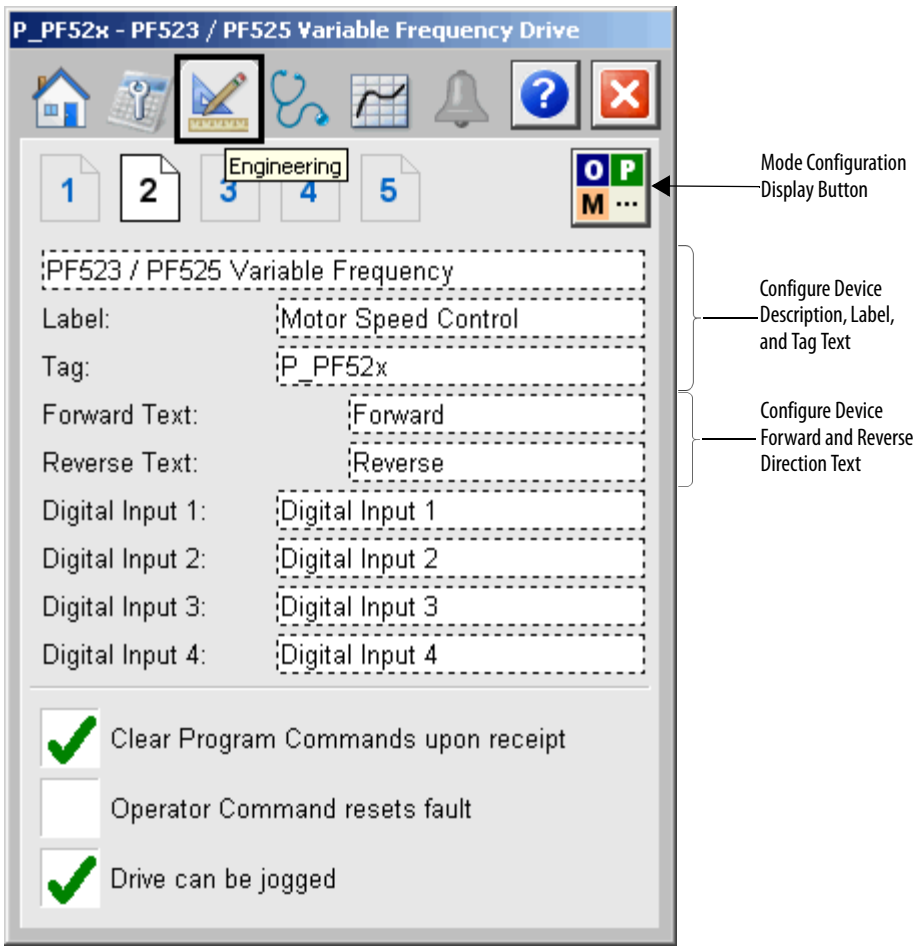


The following table lists the functions on page 1 of the Engineering tab.

Table 13 - Engineering Tab Page 1 Descriptions

Function	Action	Security	Configuration Parameters
Speed Feedback Raw Maximum/ Minimum	Type the raw input count that corresponds to the maximum and minimum (This value is usually zero.) speed feedback from the drive	Engineering Configuration (Code E)	• Cfg_SpeedFdbkRawMax • Cfg_SpeedFdbkRawMin
Speed Feedback EU Maximum/ Minimum	Type the engineering unit value for the maximum and minimum (usually zero) speed feedback from the drive. Do not enter a negative value for reversing drives. Reversing is handled separately.		• Cfg_SpeedFdbkEUMax • Cfg_SpeedFdbkEUMin
Speed Feedback Engineering Units	Type the text of the units of measure of the scaled speed feedback. (Often Hz, RPM, or Percent.)		Cfg_SpeedFdbkEU
Speed Reference Engineering Units	Type the text of the units of measure of the scaled speed reference. (Often Hz, RPM, or Percent.)		Cfg_SpeedRefEU
Speed Reference EU Maximum/ Minimum	Type the engineering unit value for the maximum and minimum (usually zero) speed reference sent to the drive. Do not enter a negative value for reversing drives. Reversing is handled separately.		• Cfg_SpeedRefEUMax • Cfg_SpeedRefEUMin
Speed Reference Raw Maximum/ Minimum	Type the raw output count that corresponds to the maximum and minimum (This value is usually zero.) speed reference sent to the drive.		• Cfg_SpeedRefRawMax • Cfg_SpeedRefRawMin
Simulated Speed Feedback Method Selection	Click the Simulation option (left, middle, or right) that corresponds to how the speed feedback for the drive is to be determined from the speed reference when the drive is being simulated (Inp_Sim = 1). Click the left option to copy the speed reference in engineering units to the speed feedback. (The simulated feedback is ramped to act like a drive that is accelerating or decelerating.) Use this option if the speed reference and speed feedback use the same scaling parameters Click the middle option to scale the simulated feedback from the speed reference engineering unit range to the speed feedback engineering unit range. Use this setting if the speed reference and speed feedback have different engineering ranges. For example, percent for reference and Hz for feedback), but the maximum reference (for example, 100%) corresponds to the maximum feedback (for example, 3600 RPM. Click the right option to scale the speed reference to raw units, copy the speed reference in raw units to speed feedback raw units, and scale to speed feedback engineering units. Use this setting if the reference and feedback ranges do not correspond.		• Cfg_SimScaleEU • Cfg_SimScaleRaw

Engineering Tab Page 2



The following table shows the functions on page 2 of the Engineering tab.

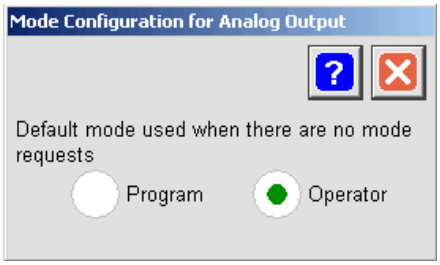
Table 14 - Engineering Tab Page 2 Description

Function	Action	Security	Configuration Parameters
	Click to navigate to the Mode Configuration display.	None	See Mode Configuration display on page 51.
Drive Description	Type a Description of the drive that appears in the title bar of the faceplate.	Engineering Configuration (Code E)	Cfg_Desc
Label	Type a Label for the drive that appears on the graphic symbol.		Cfg_Label
Tag	Type a Tag for the drive. The tag appears in the faceplate title bar and in the Tooltip.		Cfg_Tag
Forward text	Type a name for forward direction.		Cfg_FwdText
Reverse Text	Type a name for reverse direction.		Cfg_RevText
Digital Input 1 through Digital Input 4	Type names for the digital inputs.		Cfg_Digin1Txt through Cfg_Digin4Txt

Table 14 - Engineering Tab Page 2 Description

Function	Action	Security	Configuration Parameters
Clear Program Commands on Receipt	Check to have the P_PF52x instruction clear Program commands (PCmd) as soon as they are received (default).	Engineering Configuration (Code E)	Cfg_PCmdClear
Operator command resets fault	Check to have a new operator drive command reset faults. Clear this checkbox if a reset is required to clear faults.		Cfg_OCmdResets
Drive can be jogged	Check to make the Jog command button visible on the Operator tab and enable the drive to be jogged from the faceplate.		Cfg_HasJog

Mode Configuration Display

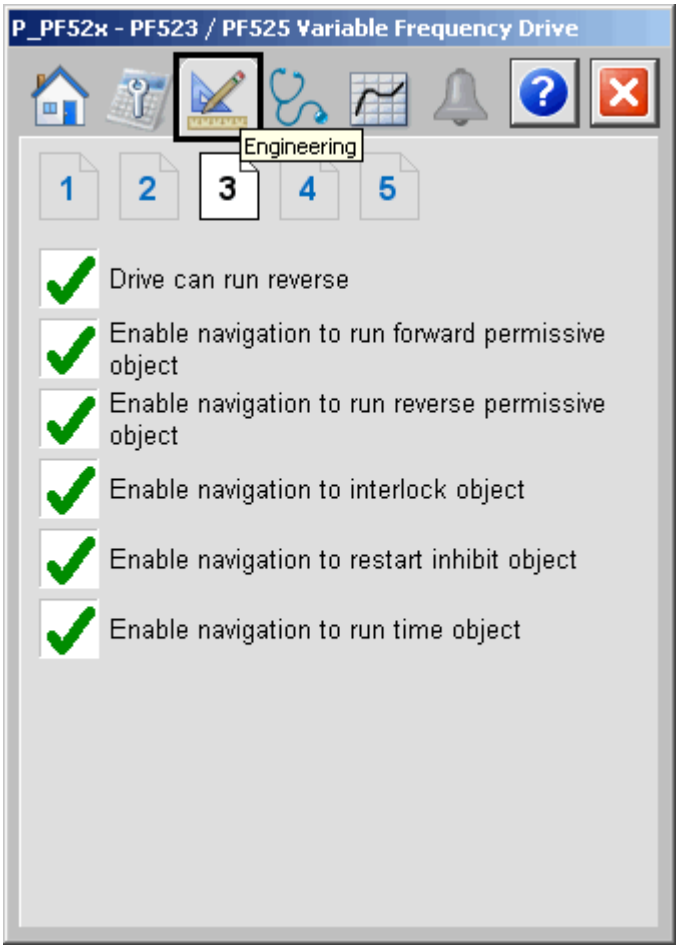


This display lets you select the default mode for the object by selecting the appropriate mode.

IMPORTANT If no mode is being requested, changing the default mode changes the mode of the instruction.

You must have FactoryTalk View security code E to select the default mode on this display.

Engineering Tab Page 3



The following table shows the functions on page 3 of the Engineering tab.

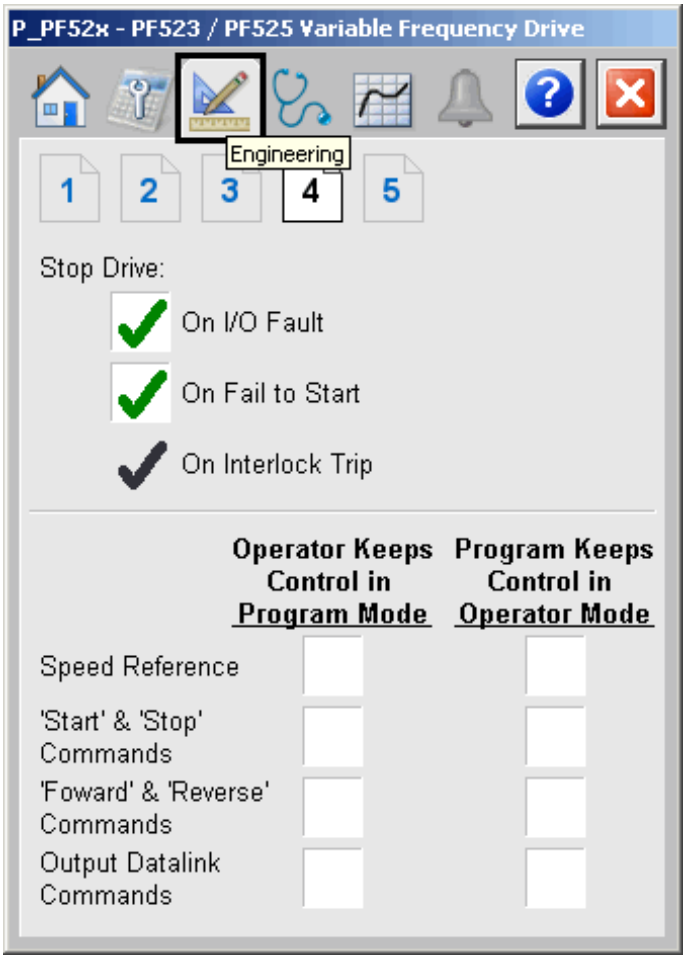
Table 15 - Engineering Tab Page 3 Description

Function	Action	Security	Configuration Parameters
Drive can run reverse	Check to make the forward and reverse direction command buttons visible on the Operator tab and enable the drive to run forward or reverse.	Engineering Configuration (Code E)	Cfg_HasReverse
Enable navigation to run forward permissive object	Check if a permissive object is connected to Inp_FwdPermOK. The Permissive indicator becomes a button that opens the permissive faceplate. **IMPORTANT:** The name of the Forward Permissive object in the controller must be this object's name with the suffix '_FwdPerm'. For example, if your P_PF52x object has the name 'Drive123', then its Forward Permissive object must be named 'Drive123_FwdPerm'.		Cfg_HasFwdPermObj

Table 15 - Engineering Tab Page 3 Description

Function	Action	Security	Configuration Parameters
Enable navigation to run reverse permissive object	Check if a permissive object is connected to Inp_RevPermOK. The Permissive indicator becomes a button that opens the permissive faceplate. **IMPORTANT:** The name of the Reverse Permissive object in the controller must be this object's name with the suffix '_RevPerm'. For example, if your P_PF52x object has the name 'Drive123', then its Reverse Permissive object must be named 'Drive123_RevPerm'.	Engineering Configuration (Code E)	Cfg_HasRevPermObj
Enable navigation to interlock object	Check if an interlock object is connected to Inp_IntlkOK. The Interlock indicator becomes a button that opens the interlock faceplate. **IMPORTANT:** The name of the Interlock object in the controller must be this object's name with the suffix '_Intlk'. For example, if your P_PF52x object has the name 'Drive123', then its Interlock object must be named 'Drive123_Intlk'.		Cfg_HasIntlkObj
Enable navigation to restart inhibit object	Check if a restart inhibit object is connected. The button that opens the Restart Inhibit faceplate appears. **IMPORTANT:** The name of the Restart Inhibit object in the controller must be this object's name with the suffix '_ResInh'. For example, if your P_PF52x object has the name 'Drive123', then its Restart Inhibit object must be named 'Drive123_ResInh'.		Cfg_HasResInhObj
Enable navigation to runtime object	Check if a runtime object is connected. The button that opens the runtime faceplate appears. **IMPORTANT:** The name of the runtime object in the controller must be this object's name with the suffix '_RunTime'. For example, if your P_PF52x object has the name 'Drive123', then its runtime object must be named 'Drive123_RunTime'.		Cfg_HasRunTimeObj

Engineering Tab Page 4



The following table shows the functions on page 4 of the Engineering tab.

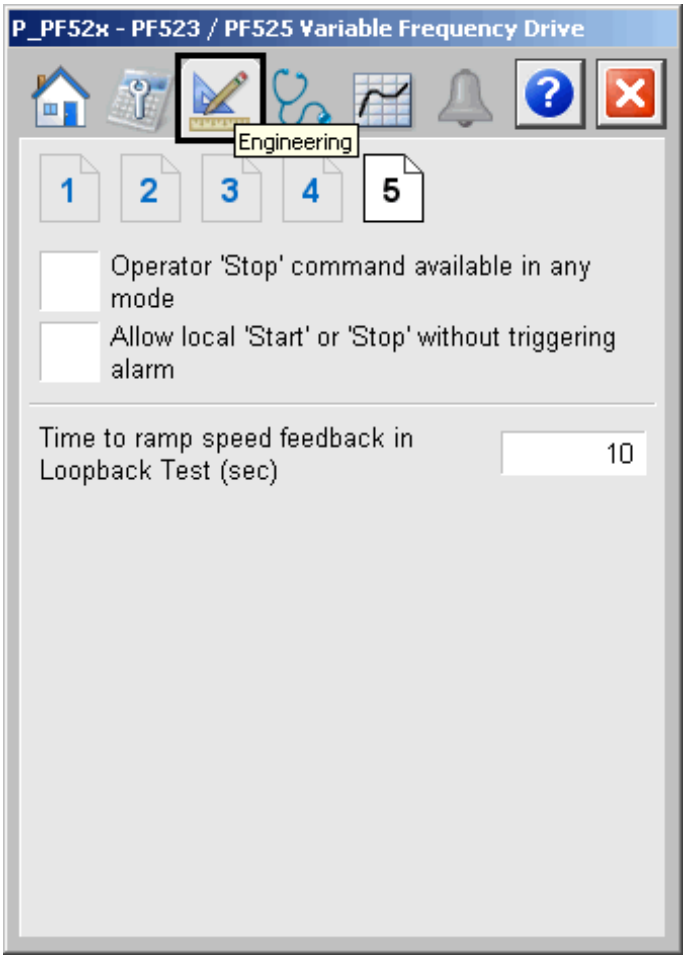
Table 16 - Engineering Tab Page 4 Description

Function	Action	Security	Configuration Parameters
Stop Drive on I/O Fault	Check to stop the drive if an I/O Fault is detected. After the I/O Fault clears, a reset is required before the drive can be started. Clear this checkbox to show only the I/O Fault Status/Alarm and not stop the drive if an I/O Fault is detected.	Engineering Configuration (Code E)	Cfg_ShedOnIOFault
Stop Drive on Fail to Start	Check to stop the drive on a failure to start. A reset is required before another start can be attempted. Clear this checkbox to show only the Fail to Start status and alarm on a failure to start. The outputs are not changed, so the instruction continues to attempt to start the motor.		Cfg_ShedOnFailToStart
Stop Drive on Interlock Trip	The drive always stops on an Interlock trip. This item cannot be cleared. It is displayed as a reminder that the Interlock Trip function always stops the drive.		None

Table 16 - Engineering Tab Page 4 Description

Function	Action	Security	Configuration Parameters
Speed Reference - Operator keeps control in Program mode	Check to keep control of the drive Speed Reference with the Operator, even if the instruction is in Program mode. Clear this checkbox to have control of the drive Speed Reference follow the Instruction mode.	Engineering Configuration (Code E)	Cfg_OperKeep.0
Speed Reference - Program keeps control in Operator mode	Check to keep control of the drive Speed Reference with the Program, even if the instruction is in Operator mode. Clear this checkbox to have control of the drive Speed Reference follow the Instruction mode.		Cfg_ProgKeep.0
Start & Stop Commands - Operator keeps Control in Program mode	Check to keep the drive Start, Stop, and Jog (if used) commands with the Operator, even if the instruction is in Program mode. Clear this checkbox to have control of the drive Start, Stop, and Jog follow Instruction mode.		Cfg_OperKeep.1
Start & Stop Commands - Program keeps Control in Operator mode	Check to keep control of the drive Start and Stop commands with the Program, even if the instruction is in Operator mode. **IMPORTANT**: The Program cannot Jog the drive, even if Jogging is enabled. Clear this checkbox to have control of the drive Start, Stop, and Jog follow Instruction mode.		Cfg_ProgKeep.1
Forward & Reverse Commands - Operator keeps Control in Program mode	Check to keep control of the drive Forward and Reverse commands, if used, with the Operator, even if the instruction is in Program mode. Clear this checkbox to have control of the drive Forward and Reverse commands follow the Instruction mode.		Cfg_OperKeep.2
Forward & Reverse Commands - Program keeps Control in Operator mode	Check to keep control of the drive Forward and Reverse commands (if used) with the Program, even if the instruction is in Operator mode. Clear this checkbox to have control of the drive Forward and Reverse commands follow the Instruction mode.		Cfg_ProgKeep.2
Output Datalink Commands - Program keeps Control in Operator mode	Check to keep control of the Datalink commands with the Operator even if the instruction is in Program mode. Clear this checkbox to have control of the Datalink commands follow the Instruction mode.		Cfg_OperKeep.3
Output Datalink Commands - Program keeps Control in Operator mode	Check to keep control of the Datalink commands with the Program even if the instruction is in Operator mode. Clear this checkbox to have control of the Datalink commands follow the Instruction mode.		Cfg_ProgKeep.3

Engineering Tab Page 5



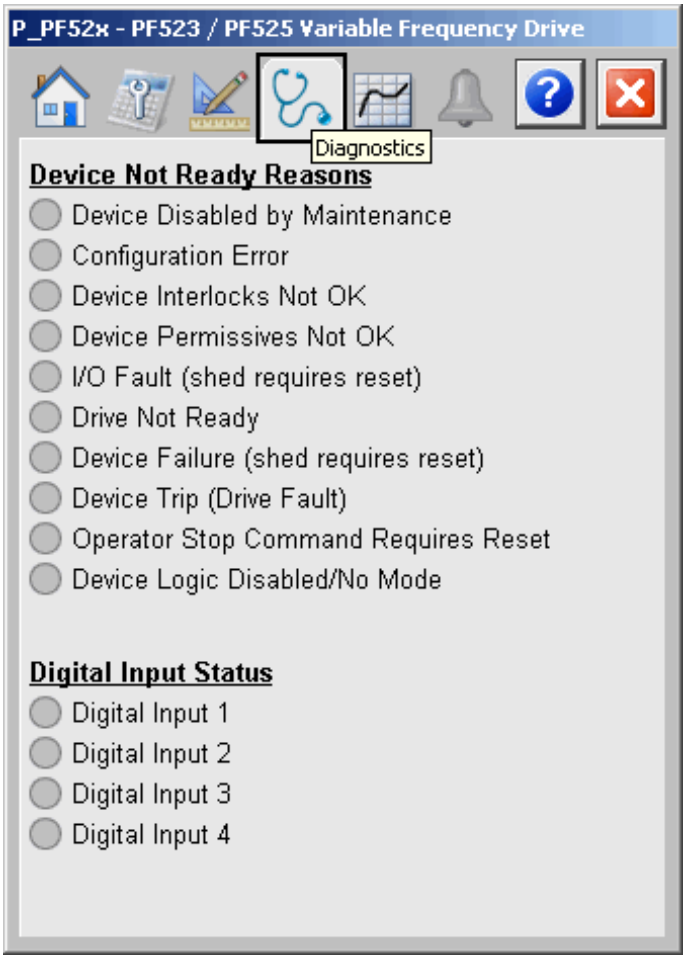
The following table shows the functions on page 5 of the Engineering tab.

Table 17 - Engineering Tab Page 5 Description

Function	Action	Security	Configuration Parameters
Operator 'Stop' command available in any mode	Check (= 1) so that the OCmd_Stop has priority and is accepted at any time regardless of instruction mode. Clear this checkbox (= 0) so that the OCmd_Stop works only in Operator or Maintenance mode. **IMPORTANT:** If OCmd_Stop is used to stop the drive in a mode other than Operator or Maintenance, a reset is required before the drive can be started.		Cfg_OperStopPrio
Allow local 'Start' or 'Stop' without triggering alarm	Check (= 1) to let local circuits start/stop the drive without an alarm. Clear this checkbox (= 0) to start/stop the drive from the HMI or program only.		Cfg_AllowLocal
Time to ramp speed feedback in Loopback Test (seconds)	Type the time, in seconds, to ramp speed feedback when in Simulation.		Cfg_SimRampT

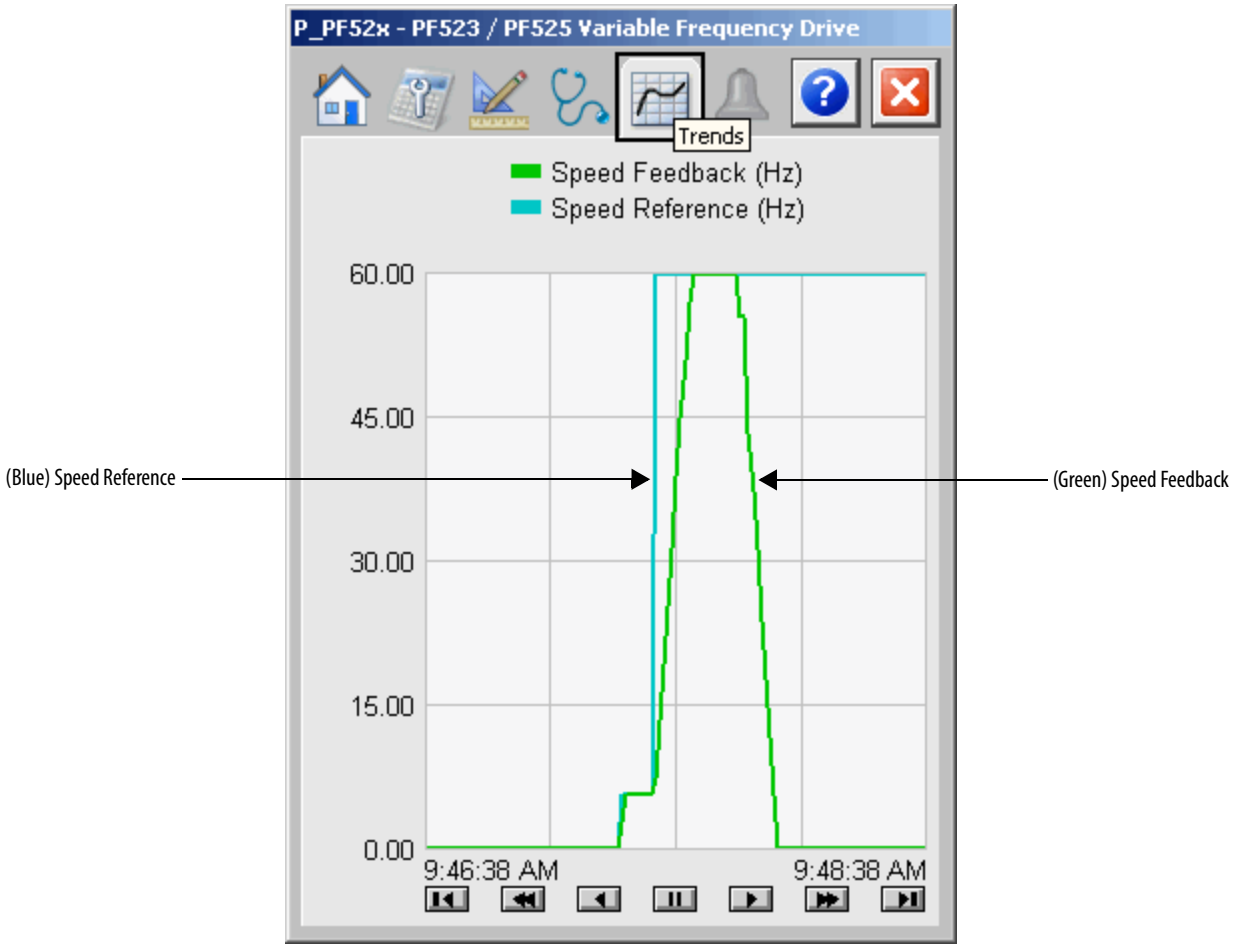
Diagnostics Tab

The Diagnostic tab provides indications that are helpful in diagnosing or preventing device problems. These diagnostic indications can include specific reasons a device is 'Not Ready', device warnings and faults, warning and fault history, and predictive/preventive maintenance data.



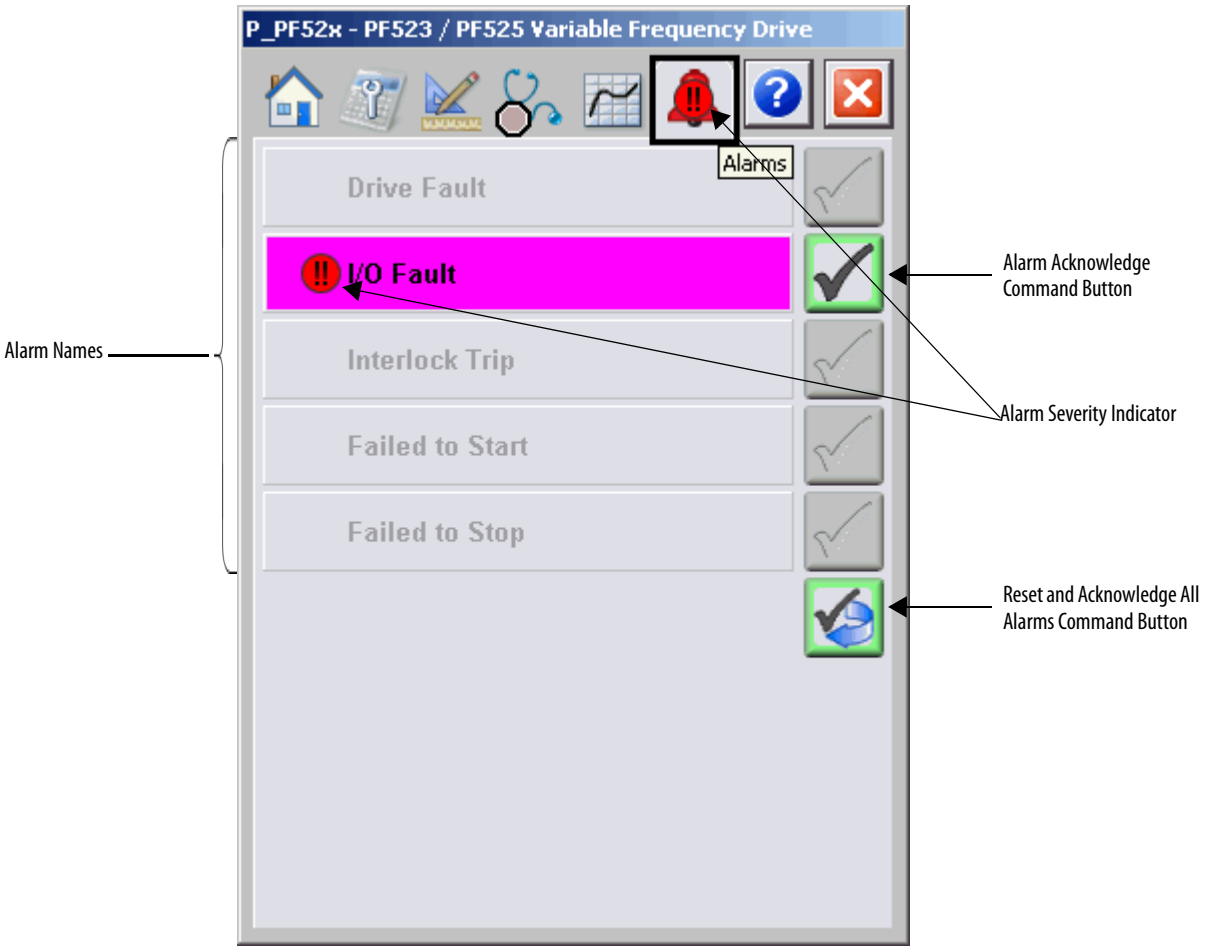
Trends Tab

The Trends tab shows trend charts of key device data over time. These faceplate trends provide a quick view of current device performance to supplement, but not replace, dedicated historical or live trend displays.



Alarms Tab

The Alarms Tab shows all available alarms for the device and their current status. From here, alarms can be acknowledged and reset. Click an alarm name to open the alarm detail faceplate for that alarm, where the alarm can be shelved by the operator, disabled by maintenance personnel, or configured by engineering.



Click an alarm name to open the P_Alarm faceplate for that alarm. From the P_Alarm faceplate, you can configure and perform additional operations on the alarm.

If an alarm is active, the panel behind the alarm changes color to match the severity of the alarm. The color of the bell icon at the top of the faceplate shows the severity of the highest active alarm, and the icon blinks if any alarm is unacknowledged or requires reset.

Table 18 - Alarm Colors

Color	Definition
Magenta	Urgent
Red	High
Yellow	Medium
Blue	Low
White (bell icon)	Alarm has cleared but is unacknowledged
Background (light gray)	No alarm

The following table shows the function on the Alarms tab.

Table 19 - Alarms Tab Description

Function	Action	Security
Alarm Name	Click an alarm name to display the corresponding Alarm Operator faceplate.	None
	Click to acknowledge the alarm.	Acknowledge Alarms (Code F)
	Click to reset and acknowledge all alarms.	

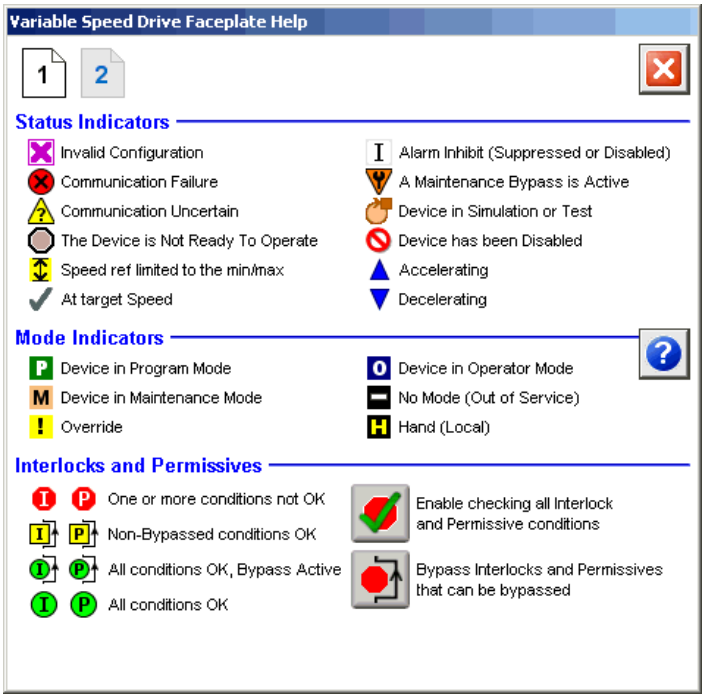
The Reset and Acknowledge All Alarms button is enabled and the panel behind the alarm blinks and the Alarm Acknowledge button is enabled if the alarm requires acknowledgment. Click the button with the check mark to acknowledge the alarm.

See the Rockwell Automation Library of Process Objects: Common Alarm Mode (P_Alarm) Reference Manual, publication SYSLIB-RM002, for more information.

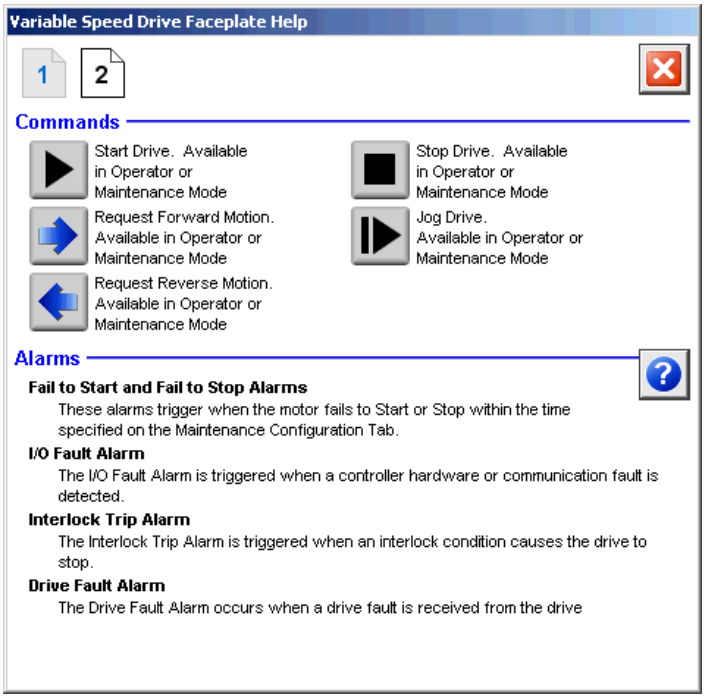
PowerFlex 523/525 Variable Frequency Drives Faceplate Help

The Faceplate Help is divided into two pages.

Faceplate Help Page 1



Faceplate Help Page 2


Variable Speed Drive Faceplate Help
1
2
Commands
Start Drive. Available in Operator or Maintenance Mode
Stop Drive. Available in Operator or Maintenance Mode
Request Forward Motion. Available in Operator or Maintenance Mode
Jog Drive. Available in Operator or Maintenance Mode
Request Reverse Motion. Available in Operator or Maintenance Mode
Alarms
Fail to Start and Fail to Stop Alarms
These alarms trigger when the motor fails to Start or Stop within the time specified on the Maintenance Configuration Tab.
I/O Fault Alarm
The I/O Fault Alarm is triggered when a controller hardware or communication fault is detected.
Interlock Trip Alarm
The Interlock Trip Alarm is triggered when an interlock condition causes the drive to stop.
Drive Fault Alarm
The Drive Fault Alarm occurs when a drive fault is received from the drive

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://www.rockwellautomation.com/support you can find technical and application notes, sample code, and links to software service packs. You can also visit our Support Center at https://rockwellautomation.custhelp.com/ for software updates, support chats and forums, technical information, FAQs, and to sign up for product notification updates.

In addition, we offer multiple support programs for installation, configuration, and troubleshooting. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/services/online-phone.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/rockwellautomation/support/overview.page, or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to help ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication RA-DU002, available at http://www.rockwellautomation.com/literature/.

Rockwell Automation maintains current product environmental information on its website at http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page.

Rockwell Otomasyon Ticaret A.Ş., Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Publication SYSLIB-RM048B-EN-P - April 2015
Supersedes Publication SYSLIB-RM048A-EN-P - September 2014

Copyright © 2015 Rockwell Automation, Inc. All rights reserved. Printed in the U.S.A.